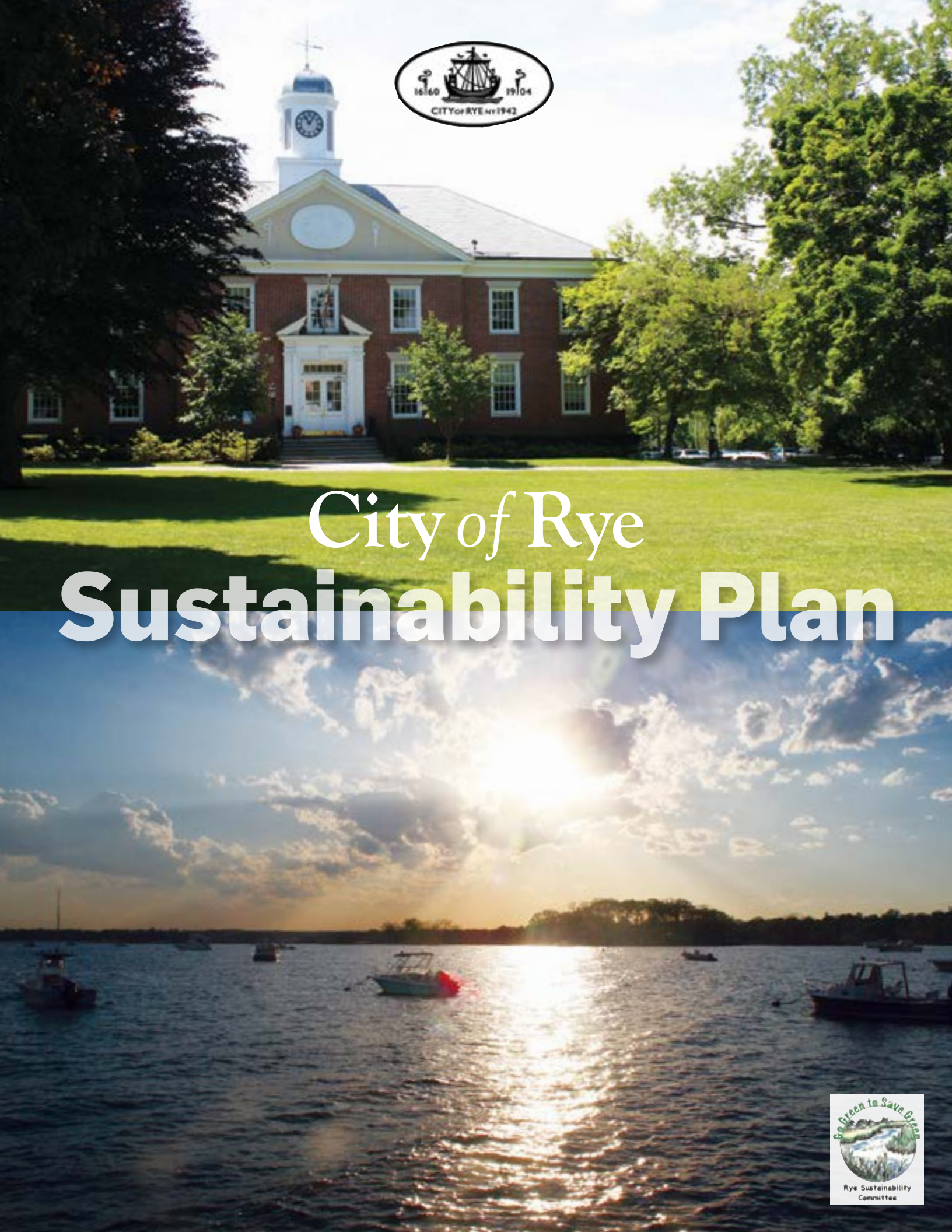


City *of* Rye
Sustainability Plan

Rye Sustainability Committee

LETTER FROM MAYOR DOUGLAS FRENCH

Dear Rye Residents:

We are extremely fortunate in the City that we have a tradition of committed volunteers and professional staff who always come together to solve today's challenges for our future generations. That spirit has made Rye a leader along the sound shore in creating paths of progress. Today, we are pleased to present a sustainability plan for our community.

Sustainable development "meets the needs of the present without compromising the ability of future generations to meet their own needs". The Rye Sustainability Plan outlines our shared goals and policies for sustainable development within Rye's characteristics – and provides a guideline for enhancing and preserving those qualities. Contained within these pages are specific, achievable recommendations, aimed at improving the environmental, economic, and social health of Rye. The Plan's focus is on five key areas:

Energy: Reduce community-wide greenhouse gas emissions, improve energy efficiency, and promote the adoption of renewable energy sources, where feasible.

Transportation: Pursue and adopt measures that will encourage more pedestrian activity, less dependence on vehicle transportation, and increase the use of energy efficient, clean modes of transport.

Waste Reduction: Encourage and support recycling and waste reduction with policies targeted at reducing waste; increasing recycling rates; increasing composting/ decreasing land-filling; and increasing the use of green products.

Water/Land Use: Conserve Rye's most precious assets –its natural, open spaces through enforcement and enhancement of existing laws, by adopting sustainable landscaping practices, and by minimizing environmental pollution. Mitigate flooding and encourage conservation of Rye's waterways and water supply through water saving measures.

Community Awareness/ Outreach: Provide open communication between the City and Rye residents through adoption of the Rye Sustainability Plan. Promote a lifestyle that embraces sustainability principles through educational programs sponsored by the Rye Sustainability Committee, municipal commissions/boards, and/or local civic organizations.

When local governments lead by bringing their services, land use, and infrastructure in line with sustainable principles, the concept of sustainability becomes more fully integrated into our culture. These principles achieve meaningful long-term savings for taxpayers through reduced public and private costs. The sustainability plan will empower citizens, businesses and community groups with the information and tools needed to make the best decisions. Achieving the goals will require an ongoing commitment to sustainability, demonstrated not only through public policy, but also through individual action.

Thank you to the Rye Sustainability Committee, City Departments and supporting organizations for once again, leading the way in an important initiative for our community.

Douglas French
Mayor

LETTER FROM RYE SUSTAINABILITY COMMITTEE

Rye is one of the most desirable communities in Westchester County. It is prized for its excellent school system, vibrant shopping district, and high property values. Yet Rye would not be able to sustain its value without the preservation of its natural environment. Just a few miles from Manhattan, Rye is a refuge from the bustle of New York City. It is situated in one of the most beautiful areas within Westchester, and arguably, the nation. The Rye community is blessed with a host of natural wonders: a spectacular shoreline, abundant beaches, expansive wildlife sanctuaries, and numerous parks and fields.

The real economic value of Rye City is dependent on preserving these natural and open spaces. The encroachment of man-made structures alters the composition of our community, threatening not only the environment, but also Rye's economic vitality.

Faced with a number of complex challenges, including pressures on its natural resources, increasing service demands and limited financial resources, Rye must adapt.

This is our opportunity as a community to decide whether we will tackle the difficult obstacles threatening Rye's preservation for future generations.

We are fortunate to be equipped with a committed and active volunteer base. Indeed, one of Rye's greatest assets is our community spirit and willingness to work together as a team. The Rye Sustainability Plan will act as a guide, mobilizing the community to overcome new challenges, apply new skills and create a different framework.

Sara Goddard
Chair
Rye Sustainability Committee

ACKNOWLEDGEMENTS

Completion of the Rye Sustainability Plan was a collaborative effort among many groups within the Rye community. We would like to thank those individuals for their guidance and support through this process.

Rye Sustainability Committee

- Dan Allen, AIA LEED AP
- Mimi Bateman
- Karen Bresolin
- Melissa Brown-Grieco
- Suzanne Clary
- Julie Engerran
- Sara Goddard, Chair
- Gretchen Kaye-Crowley
- Marci Raab
- Annalise Stack
- Birgit Townley

City of Rye

- Laura Brett, City Council
- Richard Filippi, City Council
- Douglas French, Mayor
- Peter Jovanovich, City Council/ Deputy Mayor
- Julie Killian, City Council
- Catherine Parker, City Council
- Joseph Sack, City Council
- Suzanna Keith, former City Council/Deputy Mayor
- Christian Miller, City Planner
- Eleanor Militana, Assistant to the City Manager
- Loriel De Caro, Former Chair, CC/AC
- Carolyn Cunningham, Chair, CC/AC
- Tracy Stora, Member, CC/AC
- Nick Hodnett, Member, CC/AC
- Steve Cadenhead, Co-Chair, Rye Shared Roadways Committee
- Maureen Gomez, Co-Chair, Rye Shared Roadways Committee

Outside Organizations

Civic:

- Chamber of Commerce: Catherine Parker
- Friends of Rye Nature Center: Christine Siller, Executive Director
- Friends of Rye Nature Center: Lisa Sandler, Former President
- Friends of Rye Nature Center: Lauren Donnelly, Education Director
- EAGR: Melissa Brown-Grieco, Co-President
- Rye Garden Club: Kristina Bicher, President
- Rye Garden Club: Sarah Barringer, 2nd Vice President
- Rye Garden Club: Karen Bresolin, former Conservation Chair
- Rye Town Park: Bill Lawyer
- Jay Heritage Center: Suzanne Clary

Education:

- Rye Country Day School: Scott Nelson, Headmaster
- Milton Elementary School: Mimi Bateman, former Environmental Committee Chair
- RCSD: Kathleen Ryan, RCSD Assistant Superintendent for Business
- RCSD: Kendall Egan, Member, RCSD Board

Religious Institutions:

- Rye Presbyterian Church: Cindy Kuster
- Rye Community Synagogue: William DeLynn

Other:

- ICLEI: Eli Yewdall, Program Officer, Membership and Customer Care

THANK YOU

With sincerest gratitude, we would like to thank the following organizations for their generous donations. We also extend our utmost appreciation to Robin Brown-Friedel whose skills and talents transformed a simple text document into an attractive and readable publication.

EXECUTIVE SUMMARY

BACKGROUND

In 2010, the Rye City Council directed three members of the City's Conservation Commission Advisory Council ("CC/AC") to study the feasibility of establishing a municipal sustainability committee. At a September 27, 2010 City Council workshop, the CC/AC members presented their findings, stressing the need for a sustainability committee and the importance of creating a Rye Sustainability Plan to incorporate the City's sustainability goals and initiatives. On October 10, 2010, the City Council passed a resolution forming the Rye Sustainability Committee ("RSC") with nine volunteer members from the community.

Members of the RSC have worked over the last two years to gather information, study best practices, collect and analyze data, and spearhead various initiatives. They have also worked closely with the Mayor, City Council members and staff to obtain information relevant for inclusion in the Plan. In addition, the RSC has organized public events to educate the community as well as gather feedback.

Rye's Sustainability Plan is the result of a collaborative city-wide effort to define a comprehensive, strategic and flexible framework for sustainability. The Plan will provide a framework for achieving critical sustainability goals while conserving Rye's existing natural beauty and robust economy. Our city's unique position as one of Westchester County's most desirable communities depends on preserving its open spaces and maintaining a beautiful shoreline without stifling economic growth. Rye's future economic prosperity relies on conserving

and sustaining its current natural resources. The City needs a comprehensive plan so that Rye will remain a sought-after community for future generations. The Rye Sustainability Plan will form the basis for achieving this goal. It will require periodic updates as Rye grows, technology changes and we reassess priorities.

In addition to the many environmental benefits of sustainable practices, one must also consider health benefits. Simple steps can be taken, such as minimizing ingestion of harmful plastics, buying organic, and limiting our exposure to chemical additives, pesticides and toxins. Larger changes, such as incorporating sustainable design, will help eliminate flooding and storm water run-off, which can contaminate drinking water. Focusing on better building practices will improve indoor air quality while reducing the health risks that are associated with pollutants and harmful chemicals.

The health benefits of sustainable practices are most relevant to children. Environmental exposures of concern for children include, but are not limited to, pesticides, lead, indoor air pollutants, solvents, formaldehyde and arsenic. These hazards are found in our everyday environments and many studies attest to their impact on the growing epidemics of asthma, developmental disorders, birth defects, leukemia, cancer and obesity.[1]

Education and awareness of the health benefits of sustainable practices, can guide us to making better choices and protecting our children from unnecessary harm. These choices can be simple, affordable and immediate.

1 Columbia Center for Children's Environmental Health, http://ccceh.org/our-research
Mt Sinai Children's Environmental Health Center,
http://www.mountsinai.org/patient-care/service-areas/children/areas-of-care/childrens-environmental-health-center/childrens-disease-and-the-environment

EXECUTIVE SUMMARY

SUSTAINABILITY PLAN OUTLINE

The RSC relied on ICLEI – Local Governments for Sustainability's Five Milestones for guidance in completing Rye's Sustainability Plan. (See "ICLEI and the Five Milestones of Sustainability" Section for further explanation.) With the completion of this Plan, we have fulfilled the requirements of Milestone Three.

1. Rye's Greenhouse Gas Emissions Inventory *(Pages 21-27)*

The first task required establishing a baseline assessment of our community. With the guidance of ICLEI experts and using ICLEI's Clean Air and Climate Protection software, the RSC established a baseline measurement of Rye's greenhouse gas (GHG) emissions by conducting an energy audit of all municipal, commercial and residential operations. This information was critical in helping establish goals, set initiatives and target ways to reduce emissions.

Municipal Emissions Inventory: In the selected year of 2009, Rye's government operations generated 2,777 tonnes of CO2 equivalent (CO2e). The City's buildings were the greatest contributors, emitting 50% of the total emissions. The vehicle fleet contributed 34%, streetlights and traffic signals contributed 15%, and wastewater facilities contributed 1% of government emissions.

Community Emissions Inventory: In the selected year of 2009, the City of Rye emitted 213,397 tonnes of CO2e. Transportation use was the greatest contributor to GHG emissions at 37% of the total, followed closely by the Residential sector at 34%. The Commercial sector contributed 27%, and waste and municipal sectors each contributed 1% of the community's total emissions.

2. Areas of Focus *(Pages 28-29)*

With the completion of Rye's energy audit, the Rye community is now in a position to set goals and implement a plan for Rye. The Sustainability Plan groups these goals and initiatives into five sectors, each sub-divided into community and municipal sections:

- **Energy**
- **Transportation**
- **Waste Reduction/Recycling/Green Products**
- **Water/Land Use**
- **Community Awareness/Education**

It cannot be stressed enough that these initiatives are recommendations. Some actions have been completed, some are in progress and some are long-term goals. Over time, these initiatives may need to be revised and refined given budget constraints or changes in the needs of the community. Summaries of each sector follow.

Energy: Reduce community-wide greenhouse gas emissions, improve energy efficiency, and promote the adoption of renewable energy sources, where feasible.

Transportation: Pursue and adopt measures that will encourage more pedestrian activity, less dependence on vehicle transportation, and increase the availability and use of public transportation as well as use energy efficient, clean modes of transport. All these measures will help decrease overall emissions within Rye.

Waste Reduction: Encourage and support recycling and waste reduction by policies targeted at 1) reducing waste; 2) increasing recycling rates; 3) increasing composting and decreasing landfilling and incineration; and 4) increasing the use of green products.

Water/Land Use: Conserve Rye's most precious assets – it's natural, open spaces – through enforcement and enhancement of existing laws, by adopting sustainable landscaping practices, and by minimizing environmental pollution. Mitigate flooding and encourage conservation of Rye's waterways and water supply through water saving measures.

Community Awareness/Outreach: Provide open communication between City Hall and Rye residents through adoption of the Rye Sustainability Plan and with the creation of a dedicated, comprehensive sustainability page on ryeny.gov. Promote a lifestyle that embraces sustainability principles through educational programs sponsored by the RSC, municipal commissions/boards, and/or local civic organizations.

3. Implementation and Tracking *(Pages 80-85)*

Selection and implementation of the numerous initiatives contained in this Plan will be a function of need, budget, timing and preference. The list of possible action items in each sector is lengthy and designed to provide an outline of feasible projects. The Implementation Tables in the Implementation Section summarize each potential item and estimate a time frame – short, medium or long term – for each initiative. Ideally, selection of action items will take into consideration the importance of each sector so that there will be an even distribution of projects among the sectors.

To ensure effective implementation, progress will be closely monitored with periodic updates. Progress reports will be released to the public about the status of initiatives included in this Plan. In addition, the RSC recommends periodic updates to the GHG emissions inventory. Comparing future GHG emissions audits with the baseline year will allow us to determine the efficacy of chosen initiatives. Based on the data gathered from these updates, the RSC will solicit feedback from City Council and the community in order to adjust goals, if needed.

CONTENTS

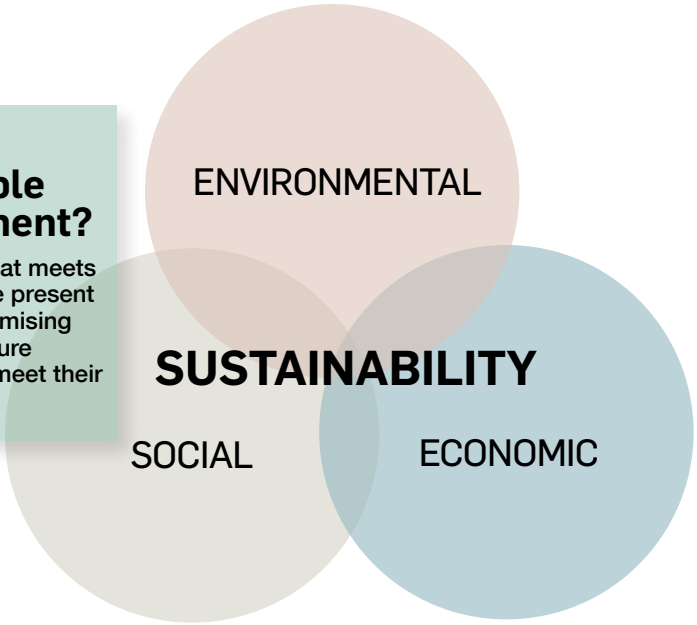
INTRODUCTION

WHAT IS SUSTAINABILITY?

Sustainable development is development that "meets the needs of the present without compromising the ability of future generations to meet their own needs." [2] The sustainability plan outlines a community's shared goals and policies for sustainable development. It embodies the critical elements of a community's economic, social and environmental characteristics while providing a guideline for enhancing and conserving those qualities. When local governments bring their services, land use, and infrastructure in line with sustainable principles, they can achieve broad benefits for their communities.

What is Sustainable Development?

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs



DEVELOPING A SUSTAINABILITY PLAN FOR RYE

1. Why Does Rye Need a Sustainability Plan?

In 2008, the Westchester County Executive released Westchester's Action Plan for Climate Change and Sustainable Development. The plan identifies strategies to reduce green house gas emissions. It also outlines prescriptive actions for all sectors to reach emission reduction goals. Following the County's lead, a number of communities [3] within Westchester designed their own plans. By adopting and implementing a plan for this community, Rye will become an integral participant in Westchester County's conservation efforts.

A recent study [4] by Pace University assessed Westchester communities based on their progress in the Westchester Action Plan's sustainability sectors: greenhouse gas emissions, energy, transportation, water resources and solid waste reduction. Rye lags behind many towns in its sustainability initiatives.

Another study [5] by Grassroots Environmental Education and Pace University ranked towns based on their efforts to address environmental and sustainability issues. Rye's ranking was below average, with neighboring towns, such as Port Chester, Larchmont and Mamaroneck, ranking higher.

Rye can and must do better. We need to act now to preserve the health of future generations. By making this commitment to sustainability, Rye will also ensure its economic strength. Indeed, as many countries, regions and communities have learned, sustainable development is the key to economic development. Future prosperity will depend on using less resources and reusing what is already available.

Just as economic prosperity is a critical goal for a community's continued health, so too are its environmental preservation and social development. These components can coexist without undermining the other, but too often, our social and environmental capital is compromised while focusing on economic progress. True prosperity requires maximizing all three.

A sustainability plan will provide a cohesive structure to house all of Rye's current and planned initiatives. It will be organized, frequently updated and accessible for viewing via the ryeny.gov

2 UN, Brundtland Commission 1987
3 Larchmont, Bedford, New Rochelle
4 "Climate Adaptation and Mitigation: Westchester Responds to the Changing Future"
5 How Green is My Town, Westchester Rankings

website. It will follow a format similar to other communities in Westchester. Most important, the Rye Sustainability Plan - created through the collaboration of all parts of the Rye community - will embody our sustainability goals.

2. Benefits from a Sustainability Plan

The RSP represents a cohesive and unified plan that reflects the community's environmental goals.

The people of Rye are already committed to preserving and enhancing their environment. A walking/biking program, leaf blower regulation, a retail shopping bag law, and no-idling enforcement, are just some of the more recent environmental initiatives.

All of these initiatives and laws face the challenge of compliance. Too often legislation is passed but a law's desired result is not achieved due to inadequate enforcement measures. Ambitious goals can also slide after the initial excitement over a new initiative wanes. Rye's plan will document all existing and anticipated sustainability goals, initiatives and laws, incorporating them into one official document. It will be a reference for the community's sustainability objectives and will include documentation of these goals.

BENEFITS OF SUSTAINABILITY

▲ QUALITY OF LIFE

Improve quality of life by promoting and enhancing Rye's natural beauty.

▲ COST REDUCTIONS

Reducing costs by implementing energy efficient, waste reduction cost saving measures.

▲ HEALTH IMPROVEMENTS

Improving our health by focusing on air quality, water and land conservation measures. Encouraging walking and biking exercise.

▲ TRAFFIC MITIGATION

Reducing traffic congestion through more walking and biking.

▲ RYE AS A ROLE MODEL

Providing a model for other communities to emulate.

▲ GREEN JOBS

Attracting new "green" businesses, thereby creating jobs and economic vitality.

INTRODUCTION

CONTEXT FOR SUSTAINABILITY

The sustainability movement grew out of worldwide concerns about the unintended social, environmental, and economic consequences of rapid growth in economies, population and consumption of natural resources.

In response to these concerns, the United Nations organized a Conference on the Human Environment in 1972. The ideas and concepts developed during this conference served as the starting point of the U.N.'s new environmental agenda. The ground breaking "Brundtland Report", which was commissioned by the U.N. and issued in 1987, offered the famous definition of Sustainable Development: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This report called for a "Global Action Plan" for "Sustainable Development".

Following that call, 172 governments came together for an "Earth Summit in Rio de Janeiro" in 1992. The result of this mega meeting was "Agenda 21", a detailed plan for achieving Sustainable Development in the 21st Century. Sustainable Development takes into account factors relating to the economy, social equity and also the environment. Following this meeting came the first agreement among nations to mandate country-by-country reductions in greenhouse gas emissions ("the Kyoto Protocol"). This agreement was ratified by most nations in the world and went into force in 2005. It should be noted that the United States withheld its support.

In 1990, ICLEI, was formed. Its members were cities, towns and small government organizations from all over the world looking for expertise and training necessary to implement sustainable development initiatives on a local level. ICLEI USA has hundreds of members ranging from big cities, such as New York City, Chicago or Seattle, to small local government organizations, such as the City of Rye, and our neighbors, Mamaroneck and Larchmont.

Many of the key concepts of sustainable development can be found in the U.S. conservation and environmental laws and it is safe to say that these laws have encouraged sustainability in some areas here in the United States. For instance, in 1990 Congress amended the Clean Air Act to reduce sulfur dioxide emissions from large coal-fired power plants by 50% over 10 years. The reductions were the result of a cap-and-trade program. However, apart from President Clinton's Council on Sustainable Development (PCSD), which was established in 1993 and then terminated only six years later, there has been no federal governmental organization responsible for a coordinated sustainable development policy for the United States. At present, most efforts in the field of Sustainable Development in this country are driven by local governments, business/industry, and the educational sector. Most often threats of climate change or the deterioration of ecosystems are the motivating force behind these initiatives.

Despite rapid technical innovations in the clean energy field, such as solar, biofuels, batteries and efficiencies, per capita carbon dioxide emissions in the U.S remain much

higher than typically found in other industrialized countries.

What about New York City and Westchester County?

In 2007, New York City introduced a comprehensive sustainability plan, "PlaNYC", that was designed to make the city greener and more livable. The plan garnered praise from all over the country for its broad scope and pragmatic approach. One of its goals was a 30% reduction in greenhouse gas emissions by 2030 (from 2005 levels). In a recent update the city reported that it had already achieved a 13% reduction in greenhouse gas emissions thanks to initiatives such as stricter energy standards and more eco-friendly vehicles.

Westchester County has had a long history of environmental advocacy. Recognizing that climate change will negatively impact the county's environment and therefore quality of life, Westchester County formed a Global Warming Task Force. This task force drew up the Westchester Action Plan, which calls for greenhouse gas reductions of 20% by 2015 and 80% by 2050 (from its 2005 base year).

ICLEI AND THE FIVE MILESTONES OF SUSTAINABILITY

Since its inception in 1990, ICLEI has grown to include over 1,200 cities in the world, more than 563 of which are in the United States. ICLEI's mission is to build, serve, and drive a movement of local governments to advance deep reductions in greenhouse gas emissions and achieve tangible improvements in local sustainability.

ICLEI developed its Five Milestones for Sustainability to guide local governments through the process of developing a sustainability plan. The Five Milestones are defined below and illustrated in Figure 1.

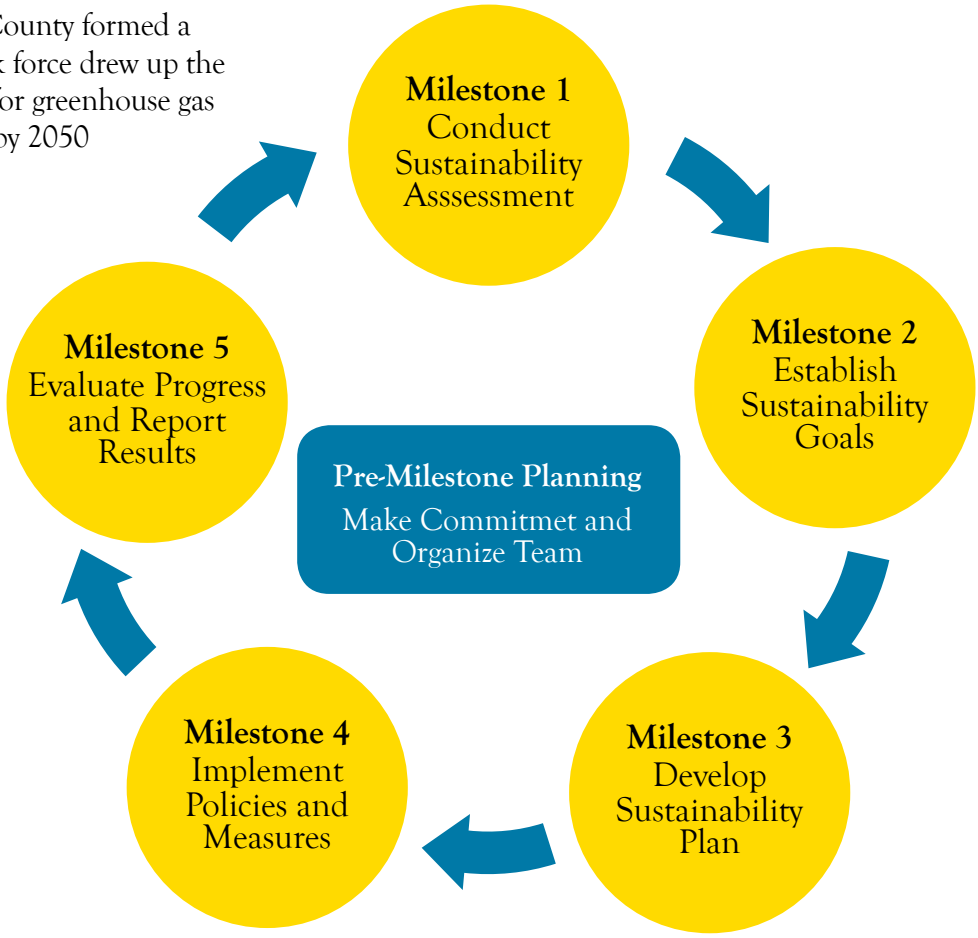


Figure 1: Five Milestones for Sustainability, ICLEI- USA

TIMELINE/HISTORY

2008

City of Rye joins ICLEI

Trip to Westchester
Materials Recovery Facility

2009

Sustainability task force set up among CC/AC members to study feasibility of a Rye Plan

2010

June –
meetings with area sustainability committees

September –
City Council Workshop presenting findings and recommending implementation of a Rye plan

October –
Resolution passed by City Council for RSC formation

2011

March –
RSC Mayor's Forum on Sustainability

May –
Whitby Castle energy efficiency workshop with Green Home Consulting

October –
First RSC/RCDS Green Screen, featuring "Bag It"

December –
Passage of retail shopping bag ordinance

2012

March -
Completion of GHG Emissions Inventory and presentation of findings to City Council

April –
First Rye Sustainability Celebrates Earth Day

First Joint Sound Shore No Idling Day

RSC receives 2012 EPA Environmental Quality Award

May –
Retail shopping bag ordinance goes into effect

December –
RSC Receives 2012 RNC Environmental Stewardship Award

2013

January -
First draft of RSP presented to City Council

February –
Second RSC/RCDS Green Screen, featuring "No Impact Man"

April –
Second Rye Sustainability Celebrates Earth Day in conjunction with CC/AC and the Rye Arts Center

GREENHOUSE GAS EMISSIONS INVENTORY

GHG EMISSIONS INVENTORY

INTRODUCTION

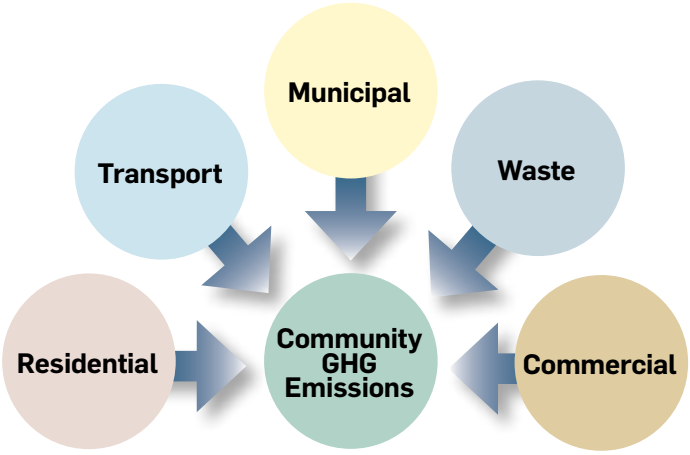
When the City Council established the Rye Sustainability Committee in 2010, it made a commitment to taking action on sustainability issues. The RSC's primary mission is to draft a Sustainability Plan for the City of Rye incorporating Rye's unique natural, social and economic characteristics. In consideration of ICLEI's Five Milestones process, the first step requires an analysis of the amount of greenhouse gases emitted by human activity in the City of Rye. With the assistance of ICLEI's proprietary software, the RSC was able to quantify Rye's GHG emissions and thus, establish a baseline. The ultimate goal will be to reduce GHG emissions through government operations, provide tangible targets for reducing emissions, and inspire change throughout the community.

Presented here are estimates of GHG emissions generated by the entire Rye community, including those resulting from the City's municipal operations. This data will provide a baseline to compare future performance, enabling us to track progress in reducing emissions.

METHODOLOGY

ICLEI's Communities for Climate Protection methodology assists local governments with calculating the relative quantities of greenhouse gases produced by energy and waste-related activities. The GHG Inventory involves performing two assessments: a community assessment and a separate government assessment. The government analysis is a sub-set within the overall community analysis.

1. Sources of Information:



The year 2009 was chosen as the baseline year for the City of Rye's GHG Inventory. For the purposes of conducting the community inventory, the following data was collected from various sources:

- **Municipal:**
  - Electricity usage figures obtained from Con Edison and NYPA bills.
  - Natural gas usage figures obtained from Con Edison bills.
  - Actual figures for electricity, natural gas, fuel oil, gasoline and diesel usage were provided by the City of Rye.
- **Residential:**
  - Includes all residences within the 10580 zip code, excluding those residences in Harrison with 10580 zip codes.
  - Electricity and gas usage figures obtained from Con Edison.
  - Fuel oil and kerosene usage were estimated by calculating the ratio of the number of homes heating with fuel oil or kerosene in Rye to the total number of homes heating with fuel oil or kerosene in New York State (both figures derived from the U.S. Census American Community Survey) and applying that fraction to total New York State 2009 fuel oil or kerosene usage (as per DOE).
  - Wood burning usage was estimated from the number of cords of wood burned per New York State household for households heating with wood (New York State DEC) multiplied by the actual number of Rye households heated by wood (U.S. Census American Community Survey).

GHG EMISSIONS INVENTORY

- **Commercial:**
  - Includes all commercial and business buildings within the 10580 zip code, not including Playland (owned and operated by Westchester County).
  - Electricity and gas usage figures obtained from Con Edison.
  - Fuel oil usage was estimated by calculating the ratio of Rye's population to New York State population and applying that fraction to total commercial fuel oil consumed in New York State (U.S. Energy Information Administration).
- **Waste:**
  - Waste emissions are based on solid waste generated by the City of Rye. Data obtained from Westchester County.
- **Transport:**
  - Emissions based on the total vehicular miles travelled ("VMT") in Rye. VMT was calculated by multiplying Rye's population by the national average VMT per capita. Data was obtained from the New York Metropolitan Transportation Council, in consultation with ICLEI.

COMMUNITY INVENTORY RESULTS

1. Emissions by Sector

The City of Rye emitted 213,397 tonnes of CO2e in 2009. Transportation was the greatest contributor of greenhouse gas emissions at 37%, followed closely by the residential sector at 34%. The commercial sector contributed 27% of total emissions and the waste and municipal sectors each contributed 1%. Table 1 shows the breakdown of emissions by sector. Figure 2 shows the percentage of emissions by sector.

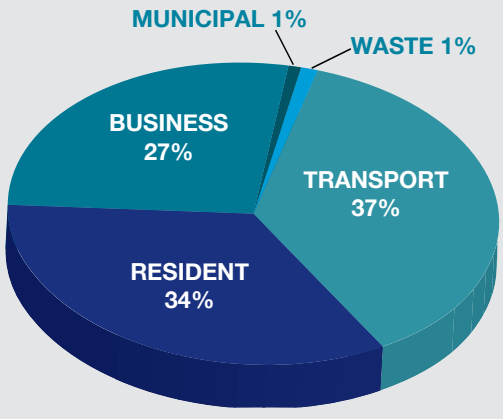


Figure 2: Community GHG Emissions by Sector (%)

	GHG EMISSIONS		ENERGY EQUIVALENT	
SECTOR	TONNES CO2e	%	MMBTUs	%
TRANSPORTATION	78,041	37%	975,861	35%
RESIDENTIAL	72,315	34%	1,026,361	37%
COMMERCIAL/ BUSINESS	58,295	27%	688,642	25%
MUNICIPAL	2,777	1%	33,896	1%
WASTE	1,969	1%	56,255	2%
TOTAL	213,397	100%	2,781,015	100%

Table 1: 2009 Total Rye GHG Emissions by Sector

The Clean Air and Climate Protection (CACP) software developed by ICLEI was used to convert total energy use into GHG emissions using coefficients according to the type of fuel used. Emissions are thus reported in terms of carbon dioxide equivalents, or CO2e. For example, methane traps heat 21 times more effectively than CO2. Therefore, a ton of methane emissions is quantified as 21 tons of CO2e. This allows for the comparison of different greenhouse gases in equivalent terms. The emissions coefficients and methodology employed by the CACP software are consistent with international inventory standards established by the Intergovernmental Panel on Climate Change and the U.S. Voluntary Greenhouse Gas Reporting Guidelines.

CACP 2009
Clean Air & Climate Protection Software

Tons vs Tonnes

A ton ("short ton") **is the unit of weight used almost exclusively in the US. It is 2,000 lbs.**

A tonne **is the related unit of weight, also called a "metric ton". It is 1,000 kg.**

Source: Answers.com

The CACP software is used by over 500 U.S. cities, towns and counties as a starting point for reducing their GHG emissions. However, we should stress that while the CACP software is a sophisticated and useful tool, calculating emissions from energy use with precision is very difficult. The model depends upon numerous assumptions and it is limited by the quantity and quality of available data. The quantity of emissions generated by the model is an approximation of reality, rather than an exact value. While understanding that the model cannot deliver a precise accounting of a community's emissions, it nevertheless is an important tool for establishing a baseline. From this baseline, it will be possible to track progress by conducting future inventories.

2. Community Emissions by Energy Source

Table 2 shows the breakdown of community emissions by energy source. Gasoline accounts for the largest emissions source, at 31%, followed by electricity (27%), natural gas (25%), and fuel oil (10%). Diesel, waste, kerosene and wood energy sources represented less than 10% of the total. Figure 3 shows the percentage of community emissions by energy source.

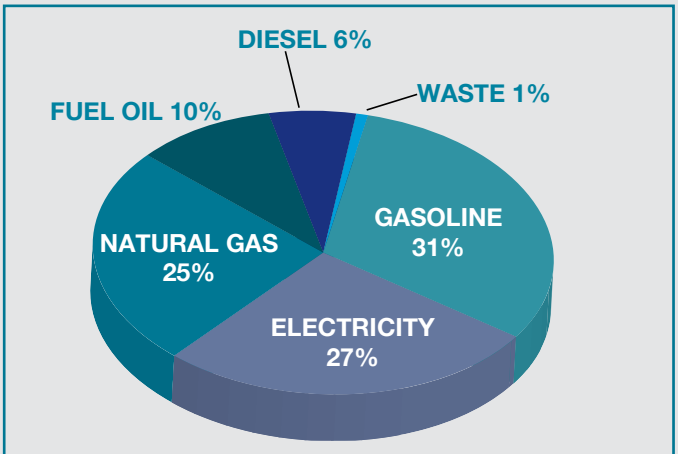


Figure 3: Community GHG Emissions by Energy Source (%)

	GHG EMISSIONS		ENERGY EQUIVALENT	
SOURCE	TONNES CO2e	%	MMBTUs	%
GASOLINE	65,826	31%	824,575	30%
ELECTRICITY	57,606	27%	556,655	20%
NATURAL GAS	53,763	25%	916,853	33%
FUEL OIL	20,727	10%	255,601	9%
DIESEL	13,143	6%	162,832	6%
WASTE	1,969	1%	56,255	2%
KEROSENE	328	0%	4,091	0%
WOOD	35	0%	4,153	0%
TOTAL	213,397	100%	2,781,015	100%

Table 2: 2009 Total Rye GHG Emissions by Energy Source

GHG EMISSIONS INVENTORY

MUNICIPAL INVENTORY RESULTS

Government operations emissions in Rye constitute about 1.3 % of the City's total emissions. Local government emissions typically fall between 2 to 5 percent of overall community emissions. As a minor contributor to total emissions, actions to reduce municipal energy use may have a limited impact on Rye's overall community emissions levels. However, municipal action has symbolic value and demonstrates leadership that extends beyond the magnitude of emissions actually reduced.

1. Municipal GHG Emissions by Sector

In 2009, the government of the City of Rye emitted 2,777 metric tons of CO2e. Buildings and facilities contributed the greatest portion of emissions at 50% of the total. The vehicle fleet accounted for the second largest amount at 34%. Streetlights and traffic signals contributed 15% of total emissions, followed by wastewater facilities at 1%. Table 3 shows the breakdown of municipal emissions by sector. Figure 4 shows the percentage of municipal emissions by sector.

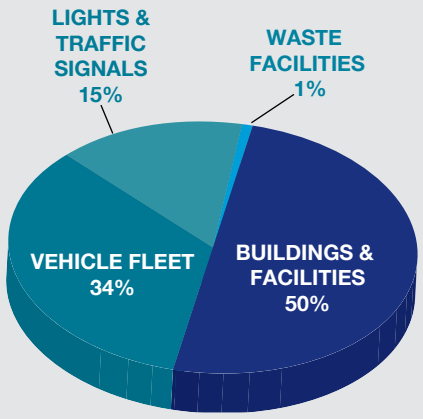


Figure 4: Municipal GHG Emissions by Sector (%)

	GHG EMISSIONS		ENERGY EQUIVALENT	
SECTOR	TONNES CO2e	%	MMBTUs	%
BUILDINGS & FACILITIES	1,388	50%	17,845	53%
VEHICLE FLEET	926	34%	11,546	34%
STREETLIGHTS & TRAFFIC SIGNALS	423	15%	4,086	12%
WASTEWATER FACILITIES	40	1%	419	1%
TOTAL	2,777	100%	33,896	100%

Table 3: 2009 Municipal GHG Emissions by Sector

GREENHOUSE GAS EMISSIONS FORECAST

Based on the community and government operations emissions inventories developed for Rye for the base year 2009, our next step was to forecast future emissions generated in our community. The emissions forecast represents a business-as-usual prediction of how GHG emissions may change in our community over time.

Assuming a projected 2% growth rate (based on forecasted GDP annual growth rates),[6] Figure 6 shows the increase in community GHG emissions over 20 years under a business-as-usual forecast.

The City of Rye's GHG Emissions Inventory was undertaken to establish a baseline, but also to identify challenges and areas for improvement. We now have data that can be used to prioritize programs, pinpoint opportunities and track progress. Streamlining programs reduces costs, while improving efficiency.

In accordance with ICLEI methodology, we recommend that the City of Rye conduct periodic GHG emissions audits to assess the efficacy of established reduction measures. The 2009 inventory will provide a starting

6 Conference Board Outlook for U.S. GDP, 2013 - 2025, http://www.conference-board.org/data/globaloutlook.cfm

2. Municipal GHG Emissions by Energy Source

Table 4 shows the breakdown of municipal emissions by energy source. Electricity accounts for the largest emissions source, at 44%, followed by natural gas (22%), gasoline (17%), and diesel (16%). Fuel oil as an energy source represented about 1% of the total. Figure 5 shows the percentage of municipal emissions by energy source.

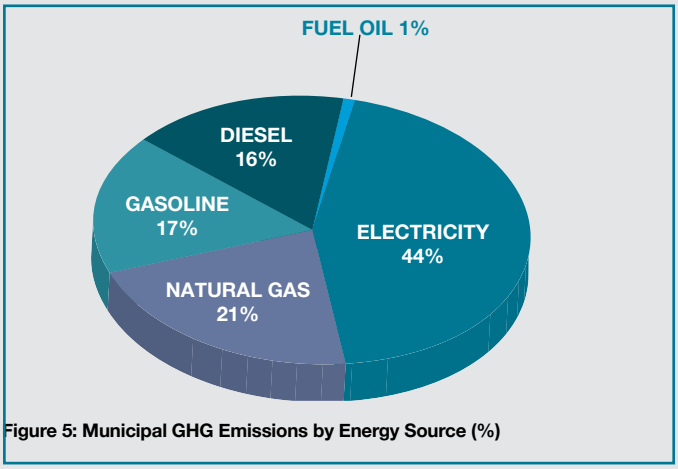


Figure 5: Municipal GHG Emissions by Energy Source (%)

	GHG EMISSIONS		ENERGY EQUIVALENT	
SOURCE	TONNES CO2e	%	MMBTUs	%
ELECTRICITY	1,229	44%	11,880	35%
NATURAL GAS	594	22%	10,123	30%
GASOLINE	483	17%	6,048	18%
DIESEL	444	16%	5,498	16%
FUEL OIL	27	1%	347	1%
TOTAL	2,777	100%	33,896	100%

Table 4: 2009 Municipal GHG Emissions by Energy Source

point for comparing the success of these measures, highlighting those programs that demonstrate a quantifiable reduction, while revealing those that may not be as effective. Tracking progress in this way will allow us, over time, to customize and target specific reduction measures based on quantifiable results.

The Areas of Focus section will outline programs – new and existing - in key sectors. The goal is to create a set of initiatives that will improve efficiency by reducing emissions, waste and costs for the community.

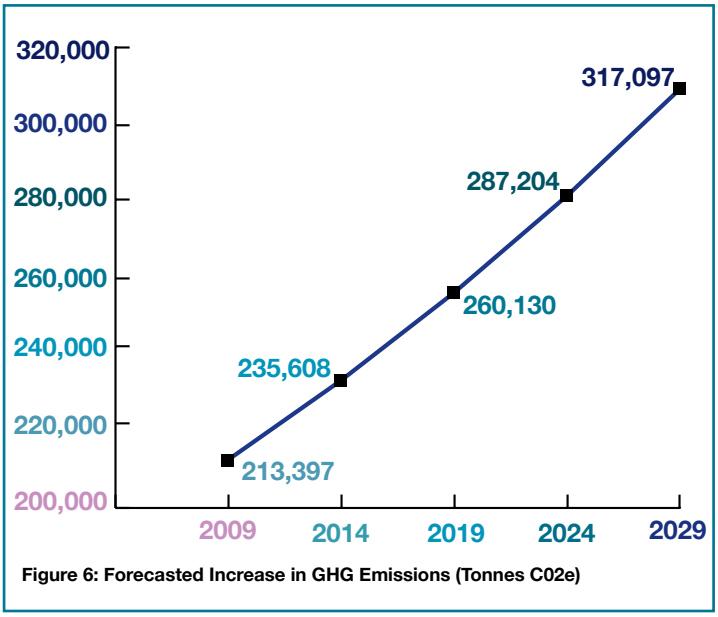


Figure 6: Forecasted Increase in GHG Emissions (Tonnes C02e)


IN MEMORY OF
THOSE WHO DIED
IN HONOR OF
THOSE WHO SERVED
KOREA
VIETNAM

OUTLINE

The action plan contained in this section is based on a number of factors, including:

- **the results of Rye's GHG Emissions Inventory;**
- **the Draft Sustainability Plan Outline prepared by the RSC for City Council;**
- **an assessment of current community activity;**
- **guidance from ICLEI's on-line resources, including their sustainability plan template; and**
- **a reliance on best practices through the review of numerous municipal sustainability and climate action plans.**

There are numerous action items in each category, intended to provide a menu of options. Some are short-term initiatives, requiring minimal effort and cost, while others will require more financial involvement and a longer timeframe for completion. The Implementation and Tracking Section contains a table for tracking progress, and outlines the various initiatives, detailing anticipated timeframes.

Each of the following five sectors includes an explanation of the goal to provide background information, a description of current accomplishments, and details of the various initiatives. Although a number of these measures have been completed or are in process, the initiatives contained herein are meant to be fluid. They will be modified as priorities, budget, and preferences change. Periodic updates to Rye's GHG Emissions Inventory will also have an impact on which action item takes precedence over others.

ENERGY

Reduce community-wide greenhouse gas emissions, improve energy efficiency, and promote the adoption of renewable energy sources, where feasible.

ENERGY

SUMMARY

The debate over "global warming" has been tossed back and forth for decades with warnings and dismissals. In the aftermath of Hurricane Sandy, the stakes may be even higher. Following the devastation wrought by Sandy in 2012, New York City's mayor at the time, Michael Bloomberg, stated simply:

> "Our climate is changing. And while the increase in extreme weather we have experienced in New York City and around the world may or may not be the result of it, the risk that it may be — given the devastation it is wreaking — should be enough to compel all elected leaders to take immediate action."

Between 1906 and 2005, temperatures have risen by 0.74 Celsius worldwide according to data collected by the International Panel of Climate Change (IPCC). While such a change appears modest, eleven of the twelve years from 1995 to 2006 ranked among the warmest years since temperature measurements began in 1850. The greatest temperature changes are being recorded in or around the Arctic Circle. The consequences of this rise in temperature may well have massive consequences for sea levels, the atmosphere and our lives.

There is overwhelming evidence to suggest that climate change is largely due to human activities.[7] The increasing consumption of fossil fuels on one hand, and massive global deforestation on the other hand, have led to a rapid increase of greenhouse gases over the last 200 years. For example, according to the EPA (U.S. Greenhouse Gas Inventory Report) in 2010, U.S. greenhouse gas emissions totaled 6,821.8 million metric tons CO2 equivalent. This represents a 10.5% increase over 1990 levels.

Global warming has been evidenced by significant reductions in glaciers and polar ice levels and accompanying rising sea levels. It also may be linked to increasingly erratic weather that has produced major storms and changing rain patterns, causing record droughts in some areas and floods in others. In 2011, FEMA declared a record 99 weather related disasters around the United States; evidence that climate change has become a new reality – costly both in economic and public health terms. [8]

Some greenhouse gases in our atmosphere occur naturally and help control the Earth's temperature. Solar energy arrives in the form of sunlight. While land and water absorb most of this energy, the rest is reflected back into space. As the earth's surface cools, it gives up energy in the form of infrared radiation. Some of this energy and radiation is absorbed by greenhouse gases in the atmosphere, making the atmosphere warmer. As the atmosphere warms, the Earth's surface (biosphere) also becomes warmer. The more GHG concentrations in the atmosphere rise, the more heat is trapped and the warmer the Earth becomes.

7 IPCC (2007). Summary for Policymakers. In: Climate Change 2007: The Physical Science Basis . Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
8 Source of data: Boden, T.A., G. Marland, and R.J. Andres (2010). Global, Regional, and National Fossil-Fuel CO2 Emissions. C02 Information Analysis Center, Oak Ridge National Laboratory, U.S. Department of Energy, Oak Ridge, Tenn., U.S.A. doi 10.3334/CDIAC/00001_V2010.

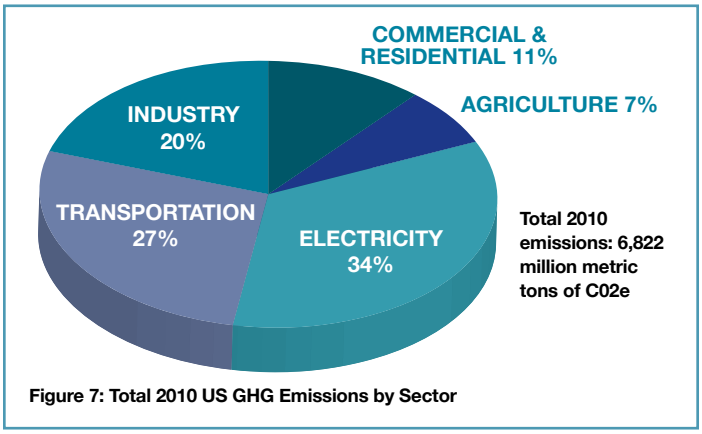


Figure 7: Total 2010 US GHG Emissions by Sector

GHG emissions increase significantly when we burn coal and natural gas to produce the electricity needed to cover our daily energy needs. The burning of fossil fuels is the largest single source of GHG emissions. We need energy to operate our factories to turn raw material into goods and we need energy to heat our residential and municipal buildings and light our streets. Due to economic expansion, global energy use has almost doubled during the last 40 years.[9] Changes in the level of economic output and fuel prices are all factors that affect the consumption of fossil fuels.

Two startling examples of countries that have worked hard to reduce their reliance on fossil fuels are Denmark and Germany. In 1973, Denmark was almost entirely dependent on foreign oil sources. Through a combination of taxation and incentives, Denmark has managed to become energy independent over the last forty years. Another country that has emerged as a leader in green technology is Germany. Renewable energy, such as wind and solar energy, now represents about 25% of Germany's total energy production. Germany is pushing to develop its renewable energy sector so that it can cover 35% of its total energy needs from renewable sources by 2020. And this share is projected to reach a staggering 80% by 2050! [10]

In order to reverse the recent trend of global warming, the City of Rye needs to find ways to reduce the amount of greenhouse gases released into the atmosphere. This can be done through developing and relying more on clean energy sources, making homes and businesses more energy efficient, and improving industrial practices.

Here in the U.S., California has been an environmental trendsetter, spearheading numerous initiatives, including the introduction in 2012 of its instate cap-and-trade program. According to environmental writer, David Biello, by setting limits on carbon dioxide emissions generated by power and industrial sectors, the state is hoping to reach its goal of reducing GHG emissions to 1990 levels by 2020 and to cut them 80% by 2050.[11] Emissions allowances are allotted to polluters, and companies whose emissions exceed their allocations must either obtain extra allowances or buy credits from projects that cut GHG emissions.

9 International Energy Agency, 2012 Key World Energy Statistics.
10 German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, General Information Renewable Energy, August 2012.
11 Yale Environment 360: Building Retrofits: Tapping the Energy-Saving Potential, by David Biello

ENERGY

According to an IPCC Special Energy report on renewable energy, approximately 80% of the world's energy supply could be met through renewable energy by 2050. Renewable energy includes bio-energy, direct solar energy, geothermal energy, hydropower, ocean energy and wind energy. This assumes local government support of the development of renewable energy sources through public policy measures. This in turn could amount to a global GHG savings equivalent to 220 – 560 Gigatonnes of carbon dioxide between 2010 and 2050. All this could be a step towards the goal of stemming the increase in global temperature to below two degrees Celsius.

ENERGY STAR: The EPA introduced ENERGY STAR as a voluntary labeling program to identify and promote energy-efficient products, new homes, commercial and industrial buildings, and design projects for commercial buildings. The program provides businesses and organizations with easy-to-use online tools and resources to help establish energy benchmarks in commercial and industrial buildings.

In the United States, we consume 40% of the world's energy by operating residential and commercial buildings. Retrofitting existing buildings is a cost-efficient way to decrease this energy use. Biello predicts that retrofitting efforts will increase thanks to mounting concerns about GHG emissions and their impact on the global climate. Innovations in solar thermal and geothermal technologies will further contribute to increased energy efficiencies of buildings.

Scientists are developing technologies that allow for ways to capture carbon dioxide from power plants and factories and store the carbon dioxide in underground caverns. The Energy Star program was developed by the EPA to promote the production and use of energy efficient appliances.

COMMUNITY ACCOMPLISHMENTS

★ The City of Rye **joined ICLEI – Local Governments for Sustainability,** in 2008, demonstrating its commitment to sustainability.

★ The RSC has performed a comprehensive **greenhouse gas audit** of all municipal, residential and commercial facilities based on 2009 data.

★ All replacement traffic signals now include more **energy efficient LED lights.** Where possible, unnecessary and unwarranted traffic signals are being removed. In addition to using electricity and adding to annual operating and maintenance expenses, unwarranted signals cause unnecessary traffic delays and queuing, which contribute to C02 emissions.

★ Following a successful education campaign by Environmental Advocates of Rye (EAGR), the City Council passed a **leaf-blower law** in 2008 to help lessen the spread of airborne particulates that can aggravate respiratory diseases, and reduce potential emissions such as ozone, carbon monoxide, nitrogen oxides and hydrocarbons.

GEOTHERMAL ENERGY:
Thermal energy contained in the earth; can be used directly to supply heat or can be converted to mechanical or electrical energy.

★ In May of 2010, **Rye's Church of the Resurrection School** installed a 24.6 kilowatt **solar energy system.** The school is the first non-residential institution in the City of Rye to install a solar energy system. Mercury Solar Systems designed and installed the system and helped the school secure a grant from NYSERDA, which financed the majority of the project cost.

★ **Jay Heritage** installed an energy-efficient **geothermal heating,** ventilation, and air conditioning system partially financed by federal funds.

ACTION STEPS

1. Reduction in Greenhouse Gas Emissions

Consider committing to the reduction of municipal greenhouse gases by a targeted amount by a specified date. Publicize the City's commitment to GHG reductions to encourage similar commitments from our residential and commercial sectors.

2. Energy Efficiency Retrofits of Municipal Facilities

There are numerous retrofits that can be performed, some more costly and time consuming than others. Selection will depend on budget considerations and prioritization of action items.

2.1. When upgrading or renovating buildings, consider energy efficient practices, such as the installation of: "low flow" plumbing fixtures; automatic sensors on hand basins; upgraded heating and cooling systems; insulation; and windows with newer, more energy efficient models.

2.2. Whenever an incandescent "Exit" sign is replaced, consider replacing with the LED version.

2.3. Evaluate and update heating controls, where necessary. Evaluate changes in building operations and house keeping practices that would conserve energy, such as setting workday thermostats to 68˚ in winter and 74˚ in summer (adjusting 8 – 15˚ when facilities are closed).

2.4. Implement an energy tracking and management system for municipal buildings. For example, new, inexpensive sensors can be placed on air ducts, boilers, chillers, computer rooms, lights, thermostats, water pipes, and other critical infrastructure, providing essential data and allowing optimization of energy efficiency.

2.5. Develop "cool roofs" on municipal properties, and encourage them on commercial and residential properties. Consider a green roof for future parking garage projects.

2.6. Implement and promote a "green purchasing" policy where, when possible, the City will purchase new equipment and appliances that are Energy Star compliant.

2.7. Install computer shut-down (optimization) software on computers.

2.8. The City can encourage the retrofit of green building technologies for commercial and residential buildings by sharing its expertise through the publication of information pamphlets/guides.

CFLs vs LEDs

CFLs: **burn relatively cool, producing about 70 percent less heat than standard bulbs. Concern over the fact that these bulbs contain mercury, causing an environmental and health hazard if broken.**

LEDs: **Operational life of current white LED lamps is 100,000 hours (vs 5,000 for incandescent bulbs). This is 11 years of continuous operation. Using LEDs would virtually eliminate the need for routine bulb replacement. The real strength of LED lighting is its reduced power consumption. A LED circuit can approach 80% efficiency, meaning that 80% of the electrical energy is converted to light energy. An incandescent bulb operates at about 20% efficiency. This alone generates a significant cost savings since LEDs can be used for a decade without burning out.**

3. Energy Efficient Upgrades and Retrofits of Lighting

While the upfront costs can be significant, upgrading and retrofitting municipal lighting can reduce costs in the long term by increasing energy efficiency and decreasing the City's carbon footprint.

3.1. When upgrading street, sidewalk and traffic lighting, consider replacing them with state-of-the-art energy efficient lighting.

3.2. Retrofit municipal lighting fixtures and/or replace lamps with CFLs or LED technology (or better, as technology advances).


PLAYLAND → I
2 ← PORTCHESTER
6 ← WHITE PLAINS
10 ← STAMFORD

ENERGY

3.3. Where necessary, install lighting occupancy sensors in all municipal buildings.

3.4. Decrease average daily time for street lighting operation.

3.5. Institute a "lights out at night when not in use" policy in municipal buildings.

3.6. Replace municipal holiday/decorative lighting with energy efficient lighting, such as LEDs.

4. Green Building Practices

Adopting green building practices through new legislation, education programs, and incentives can have a significant impact on the environment while increasing energy efficiency and decreasing long-term costs.

4.1. Conduct a study of municipal and county green building codes. Consider the applicability of adopting measures for the City, such as: revising building/energy codes to support green building targets; providing incentives for LEED certified construction/renovation projects; and/or encouraging all new residential dwellings to comply with the current NY ENERGY STAR labeled home requirements.

4.2. Consider drafting legislation requiring that every new residence sold or transferred must obtain a Home Energy Rating (HER). A HER is a measurement of a home's energy efficiency and can be used to determine the relative efficiency of a specific residence.

4.3. Provide a system of recognition for new construction that exceeds minimum standards for energy conservation.

4.4. Make training programs on green building/energy code procedures and financing available to City staff.

4.5. Include exceptions in the building codes for experimental architectural and energy innovations (beyond current codes and established practices) made by architects and engineers seeking to advance building performance.

4.6. Institute an accelerated processing service for projects that demonstrate a higher energy efficiency and/or LEED standard than required by the City code.

4.7. Consider the requirement of owner contracted third party inspections to certify all construction meets local and statewide energy codes.

LEED (Leadership in Energy and Environmental Design): an ecology-oriented building certification program run under the auspices of the U.S. Green Building Council (USGBC). LEED concentrates its efforts on improving performance across five key areas of environmental and human health: energy efficiency, indoor environmental quality, materials selection, sustainable site development and water savings.

5. Renewable Energy

5.1. Investigate the feasibility of installing solar photovoltaics (panels, shingles, siding, glass) on municipal facilities.

5.2. Investigate the feasibility of installing solar hot water systems in municipal facilities. Solar thermal collectors installed on building roofs can help reduce the cost of making hot water by approximately 50-75%.

5.3. Promote community commitment to renewable energy, green building and energy efficiency through various education programs. Provide information to the community about how to access existing energy efficiency and renewable energy funding.

Rye Sustainability Committee

TRANSPORTATION

Pursue and adopt measures that will encourage more pedestrian activity, less dependence on vehicle transportation, and increase the use of energy efficient, clean modes of transport. All these measures will help decrease overall emissions within Rye.

TRANSPORTATION

SUMMARY

A primary obstacle to achieving sustainability is reliance on cars and single occupancy vehicles. According to the EPA, greenhouse gas emissions from transportation accounted for about 27% of total U.S. emissions in 2010, making it the second largest contributor of U.S. greenhouse gas emissions after electricity (See, Figure 7: Total U.S. GHG Emissions by Economic Sector on page 33).[12] GHG emissions from transportation have been on the rise due to increased consumer travel and lack of fuel efficiency improvements. As shown in Figure 8,[13] GHG emissions from transportation have increased by approximately 19% since 1990. Our country's reliance on personal automobile transport has broader implications beyond GHG emissions. It is a contributing factor to our nation's health problems and it has made us a nation beholden to the fluctuating supply of foreign oil.

In 2012, recognizing the need to halt the increase in GHG emissions from transportation, the Obama Administration announced new standards that would increase fuel economy to the equivalent of 54.5 mpg for cars and light-duty trucks by 2025. It is anticipated that, when combined with previous standards set by the Administration, this policy will nearly double vehicles' fuel efficiency. The Obama Administration estimates total cost savings to consumers from these new standards of more than $1.7 trillion at the gas pump and could reduce U.S. oil consumption by 12 billion barrels. Commenting on the new agreement, President Obama remarked,

> "These fuel standards represent the single most important step we've ever taken to reduce our dependence on foreign oil ... They build on the progress we've already made to save families money at the pump and cut our oil consumption. By the middle of the next decade our cars will get nearly 55 miles per gallon, almost double what they get today. It'll strengthen our nation's energy security, it's good for middle class families and it will help create an economy built to last."

In addition to improving fuel efficiency standards, we must reduce our dependency on cars as the dominant mode of transportation. While personal automobile travel will remain the preferred choice, travel efficiency measures such as commuter, biking, and pedestrian programs will help curtail the increase in GHG emissions. There are a variety of federal and state programs designed to encourage communities to expand transportation choices beyond the personal car. Bike paths, multi-use trails, and improved pedestrian connections are being developed across the country with the assistance of federal and state funding.

According to the GHG Emissions Inventory for 2009, the transportation sector in Rye was the greatest contributor of GHG emissions, estimated at 37% of total Rye emissions. Cars, trucks and SUVs emit

12 EPA, http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html
13 EPA, http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html

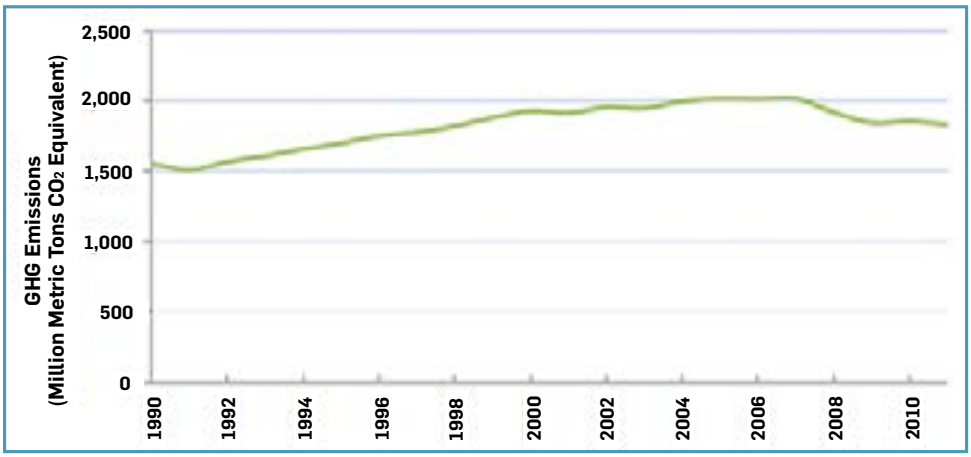


Figure 8: GHG Emissions from Transportation

AQI (Air Quality Index):

EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act:

1. ground-level ozone
2. particulate matter
3. carbon monoxide
4. sulfur dioxide
5. nitrogen dioxide

For each of these pollutants, the EPA has established national air quality standards to protect public health. Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in this country.

harmful pollutants, compromising the quality of the air we breathe while contributing to a variety of respiratory health problems. Although Westchester County's AQI has declined in recent years, it has had one of the higher readings for New York State, ranking ninth out of 61 N.Y. counties with the highest AQI.[14]

There are a number of ways to reduce emissions from transportation vehicles in Rye. One of the easiest solutions is to simply leave the car at home and walk or bike. Unlike many suburbs, Rye is a pedestrian friendly city where access to schools, shopping and residences is all within a short distance. A safe environment with sidewalks and bicycle lanes makes Rye a community where residents could easily reduce driving time in favor of pedestrian activity. Other options are to reinstitute modes of public transportation (buses to train stations, schools), choose smaller, more fuel-efficient models when purchasing a new vehicle, and car pooling.

While personal automobile travel will remain a popular and preferred method of travel, reducing the amount of time in a vehicle can have a significant impact on reducing GHG emissions. It is also the single largest contribution that every individual can make to decrease harmful air pollutants. It is a simple choice that can yield positive benefits for the community and beyond.

14 USA.com Ranking, http://www.usa.com/rank/new-york-state--air-quality-index--county-rank.htm?hl=Westchester&hlst=NY

TRANSPORTATION

COMMUNITY ACCOMPLISHMENTS

★ Established in 2010, the **Pedestrian Safety and Biking Master Planning Committee** reviews and assesses Rye's current transportation system.

★ The city implemented a **bicycle and pedestrian infrastructure plan,** which included the introduction of sharrow lanes on Forest Avenue. The project was funded by a $20,000 national YMCA grant. In addition, the Traffic and Pedestrian Safety Commission has incorporated visual improvements at the intersection of Forest Avenue and Manursing Way.

★ The City has joined with the YMCA and Safe Routes to School to participate in a series of **initiatives to raise awareness of pedestrian safety.** These include, the installation of Stop signs at strategic locations to allow pedestrian traffic, and the widening of the Old Post Road Bridge.

★ To **promote biking and walking,** the City has increased the number of bicycle racks in Rye's main shopping district.

★ All three Elementary Schools have established a **Walking School Bus Program** to support children walking to school.

★ The first **Joint Sound Shore No-Idling Day** on April 23, 2012 among Rye, Larchmont and Mamaroneck helped raise awareness about the harmful environmental effects of unnecessary idling with a number of activities/events:

- **A declaration of Sound Shore No-Idling Day by City Council;**
- **Police news release about enforcement of the existing no-idling law and the rationale for the law;**
- **Educational activities for the participating schools;**
- **Vests purchased for the school traffic guards displaying the message, "No Idling";**
- **A new "No Idling" sign erected at the Rye Free Reading Room parking lot; and**
- **Media coverage of the day and its message.**

★ The City uses three **hybrid vehicles** and five police **bicycles** for parking enforcement.

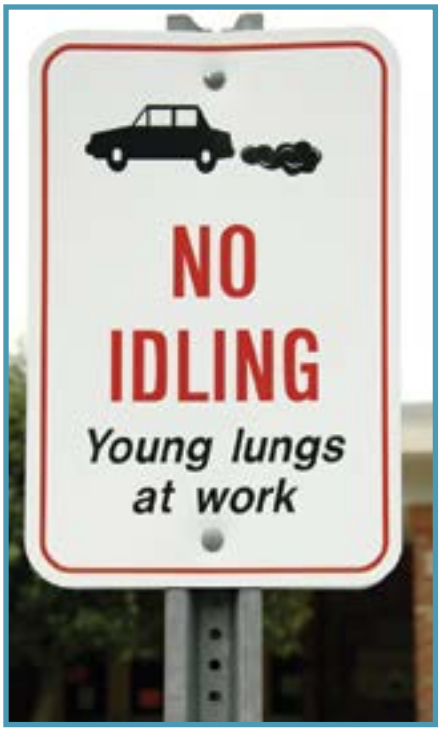
SUSTAINABILITY *in our* GOVERNMENT

Rye Shared Roadways Committee (RSRC)

The RSRC was formed in 2010 for the purpose of evaluating, recommending and prioritizing ways for Rye City to become a safer and more enjoyable walking and biking community. RSRC accomplishments include:

- **A comprehensive report providing a prioritized list of projects to implement when funding opportunities became available;**
- **Approval for the East Coast Greenway route through Rye; and**
- **Completion of the Forest Avenue sharrows pilot project.**

TRANSPORTATION



Tips for Improving Air Quality

What can I do to reduce air pollution and thereby improve air quality? You, as an individual, can do a number of things, such as:

- **Conserve energy**
- **Drive less, ride your bike or walk**
- **Carpool**
- **Make sure your car is well-tuned**
- **Take care not to spill gasoline when filling the tank of your car, lawn mower or recreation equipment**

Source: WestchesterGov.com

ACTION STEPS

1. Municipal

While the City of Rye has demonstrated a commitment to traffic and pedestrian safety and has recognized the importance of reducing vehicle pollution, additional measures will establish the City as a leader in promoting climate-healthy practices. The following suggested action items could help reduce emissions by 1) encouraging less reliance on individual vehicle transportation; 2) shifting to more fuel-efficient vehicles; and 3) switching to fuels that emit less pollution.

1.1. Purchase low sulfur biodiesel for use in Rye's municipal fleet. Using biodiesel reduces pollution, is more energy efficient, and can be purchased at a discount. No conversion of Rye's existing diesel fleet is necessary.

1.2. Encourage car-pooling, van-pooling, and mass transit use by municipal employees.

1.3. Provide municipal employees with public transport travel passes. Provide cycle facilities (showers, lockers, bike racks) for municipal employees.

1.4. When purchasing new municipal vehicles, consider purchasing fuel efficient, smaller, or hybrid vehicles.

1.5. Offer incentives to municipal employees for driving fuel-efficient vehicles, such as preferred parking spaces or reduced parking fees at municipal parking lots.

1.6. Enforce Westchester County's anti-idling laws for City owned vehicles (excluding emergency vehicles).

1.7. Consider the inclusion of a small shuttle bus or trolley route from the Rye train station to Harrison train station, which would provide additional public transportation and provide easy access to the Jay Estate, Rye Nature Center and Marshlands Conservancy as well as other Rye sites of natural and historic value.

2. Community-Focused Initiatives

The community has instituted a number of initiatives, referenced in the Accomplishments Section above, that are designed to encourage walking and biking. The City, assisted by the RSC, and/or other relevant municipal committees, could institute any or all of the following community based initiatives designed to increase pedestrian activity and decrease pollution.

2.1. Infrastructure improvements targeted at enhancing pedestrian activity. Improvements could include:

- **2.1.1.** repairing sidewalks;
- **2.1.2.** increasing the miles of sidewalks;
- **2.1.3.** constructing curb extensions and other safety enhancements at intersections;
- **2.1.4.** constructing ramps for strollers, wheelchairs; and/or
- **2.1.5.** creating pedestrian-friendly outdoor areas, which include, landscaping and benches.

2.2. Infrastructure improvements targeted at enhancing biking activity. Improvements could include:

- **2.2.1.** increasing miles of bicycle lanes, paths;
- **2.2.2.** adding bike route signing; and/or
- **2.2.3.** adding more bike racks in central Rye and at the train station.

ACTION STEPS

2.3. Provide electric plug-in stations with dedicated parking at the train station.

2.4. Offer incentives for driving fuel-efficient vehicles, such as preferred parking spaces or reduced parking fees at municipal parking lots.

2.5. Encourage more reliance on walking and biking, by raising parking prices and/or extending the hours of operation in public parking lots.

2.6. Step up enforcement of existing no-idling laws, including enforcement of residential vehicles, local transit buses and school buses.

2.7. Create an education program or programs, in conjunction with the RSC, Safe Routes to School Committee, and other relevant civic organizations, to encourage more pedestrian activity for school children and their caregivers by promoting the health benefits of walking or biking to school.

2.8. Encourage car-pooling to school by creating an awareness program in the schools.

2.9. Continue partnerships with neighboring communities to advocate for greater enforcement of no-idling laws and promote walk to school programs.

SUSTAINABILITY *in our* COMMUNITY

Jay Heritage Center (JHC)

Successful JHC initiatives include:

- Westchester Cycling Club's Independence Day Ride, hosted by JHC every July for the past ten years with over 100 cyclists of every ability and age in participation. It is part of the JHC mission to encourage use of green transportation and healthy recreation.
- Assisting EAGR with including language on invasive trees in the Rye Tree ordinance based on best practices research.
- Becoming a member of NYDEC's Lower Hudson Partnership for Regional Invasive Species Management (PRISM) documenting the location of invasive species in Rye. JHC has hosted the first IMapInvasives program of its kind in Westchester, training volunteers to map invasive plants, including multiflora rose, honeysuckle, wineberry, garlic mustard and mugwort as well as invasive Ailanthus and Norway maple trees using GPS technology and their smart phones.
- "Our Footprints Matter" program, a component of every JHC school group tour. The program focuses on introducing students and teachers to sustainable habits in daily routines based on the model of the Jay House. Middle school classes of 150 students per session from Rye, Port Chester, Rye Neck and New Rochelle have participated in this program each year through a grant funded by Con Edison.
- Annual Sustainable Landscape Symposium at JHC in concert with The Cultural Landscape Foundation. Past events have featured nationally know conservation and native tree experts, including Tom Wessels, and landscape architect, Thomas Woltz.
- Annual JHC Horticulture Lunch, which features a different sustainable topic and speaker each year.
- Being designated a National Public Lands Day site with volunteers removing invasive plants at the Jay Estate.
- Deer Management Study and Plan - Habitat and landscape conservation is a sound component of any municipal sustainability plan. Administrators from the City of Rye in conjunction with NYDEC, Westchester County Parks and Conservation and the Jay Heritage Center recognized in 2013 that a strategy for studying and managing Rye's growing deer population was a priority but must be tailored to fit the size and specific needs of our community. Using New York State's Deer Management Plan as a reference resource and with input from neighboring towns and other programs like the Deer Alliance of Fairfield County, the City of Rye hopes to first gather extensive data about deer densities in Rye and their range of movement before taking any action to manage herd sizes.

WASTE REDUCTION & RECYCLING

Encourage and support recycling and waste reduction by implementing policies targeted at 1) reducing waste; 2) increasing recycling rates; 3) increasing composting and decreasing landfilling and incineration; and 4) increasing the use of green products.

WASTE REDUCTION & RECYCLING

SUMMARY

The waste sector contributes a small amount (approximately 1%) of GHG emissions in Rye. Although a small percentage in Rye, the proliferation of waste in our region, state and nation is still accumulating at alarming levels. Americans lead the industrialized world in waste generation, producing on average 4.5 pounds per person per day of waste. New York has approximately 30 landfills accepting around six million tons per year of waste from across the state. [15] Although there has been a slight reduction in the rate of growth in recent years, the amount of Municipal Solid Waste (MSW) has increased steadily nationwide since 1960.[16] Of that, only 30% of MSW generated is recycled annually. [17]

The build-up of excess waste causes a multitude of environmental problems, most notably the pollution of soil and groundwater from contaminated landfills. Chemicals, hazardous materials, and numerous toxic products – medicines, paints, insecticides, batteries – are frequently included in the waste stream, threatening the safety of our air, water and possibly, the food we eat. In addition, decomposing landfill waste produces methane gas, a significant contributor to GHG emissions. Aside from the environmental implications, disposing of solid waste is a costly business, with increased costs to municipalities in trucking and disposal fees.

The solution – to reduce waste at the source – is tremendously effective and simply a matter of changing ingrained habits. Recycling, including composting, is also effective in diverting waste away from landfills and helping reduce GHG emissions. In 2000, for example, recycling resulted in an annual energy savings of at least 660 trillion BTUs, which equals the amount of energy used in six million households annually. [18]

The good news is that there are numerous simple, low cost, but effective ways to stem the build-up of waste. Following the principles of reduce, reuse and recycle, it is possible to make significant improvements in waste reduction with minimal disruption to daily life. The challenge is to mobilize community support through education and awareness initiatives, while setting an example for change within City Hall.

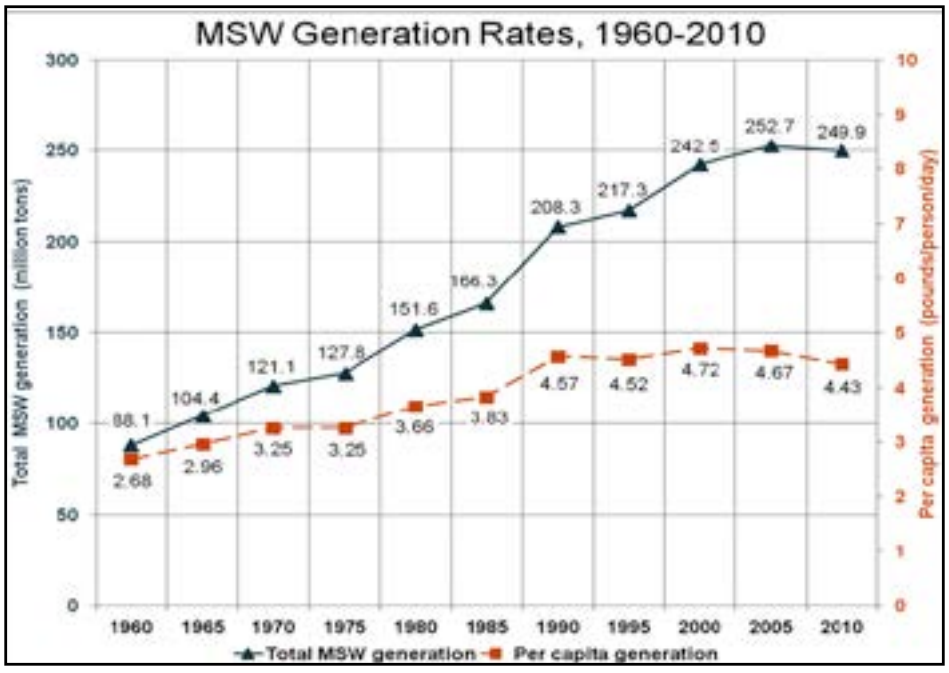


Figure 9: MSN Generation Rates
Source: EPS.gov

Benefits of Reducing Waste

The benefits from waste reduction, reuse, recycling and composting efforts include:

- **energy savings**
- **pollution reduction**
- **reducing the ultimate volume of waste requiring disposal in landfills and Waste-to-Energy facilities**
- **fostering an environmental ethic among citizens**
- **increased carbon sequestration**
- **conservation of natural resources**

Source: NYDEC

15 NYDEC Recycling and Composting Page, http://www.dec.ny.gov/chemical/294.html
16 EPA Region 7 Solid Waste Page, http://www.epa.gov/region7/waste/solidwaste/reduce_waste.htm
17 EPA Clean Energy Page, http://www.epa.gov/cleanenergy/energy-and-you/affect/municipal-sw.html
18 EPA Region 4: Resource Conservation Challenge Pate: http://epa.gov/region4/recycle/faqs.htm

COMMUNITY ACCOMPLISHMENTS

★ In 2011, the City of Rye was the first municipality in Westchester County to pass a **retail shopping bag law,** banning all plastic shopping bags distributed at the point of sale. It has since become a model for other Westchester communities.

★ The City of Rye was Westchester County's 2011 **top municipal recycler** with a 32% curbside recycling rate.

★ The City actively advertises **County-wide material collection days** for residents' hazardous waste.

★ The DPW has purchased two **solar powered public trash compactors** ("Big Bellies"), which are in use on Purchase Street.

★ The City and/or its contractors **recycle asphalt millings** from municipal paving and roadway projects.

ACTION STEPS

1. Municipal

As a leader in recycling and waste reduction, the City can set an example for the community by promoting best practices and continuing its waste reduction efforts. Any or all of the following action steps could be implemented to further reduce waste while cutting costs.

1.1. Promote Rye's recycling record, using its reputation to encourage continued recycling programs and to set more aggressive goals/targets.

1.2. Increase the number of recycling bins throughout Rye. Consider purchasing more solar powered public trash compactors ("Big Bellies").

1.3. Institute a municipal office waste management system targeted at reducing excess waste of paper, supplies and bottled water, while cutting costs.

1.4. Evaluate municipal purchasing policies of cleaning products to identify areas where green products can be used. Use products that release only low volatile organic compounds (VOCs) to reduce air pollution.

1.5. When undertaking a painting project, use low VOC paint.

1.6. Institute an educational program to encourage restaurants and residences to recycle grease waste. The program would demonstrate the financial benefits of this type of recycling and explain how collected grease can be refined into biodiesel fuel.

1.7. Consider implementing an awareness campaign about the harmful environmental effects of specified harmful chemicals. Examples could include aerosols, floor polish, VOC paint, chemical paint strippers, toxic chemical products or pesticides. Identify one hazardous chemical product currently used in municipal facilities, identify the dangers posed by using this product, and make a commitment to reducing or eliminating use of the chemical. Offer environmentally preferable alternatives to the chemical version. Publicize the City's decision, encouraging Rye residents to follow City Hall's lead.

1.8. Provide information on the ryeny.gov site regarding County/State recycling laws, composting education programs, green products, environmentally preferred local vendors, and other relevant information pertaining to waste reduction.

2. Community-Focused Initiatives

The following community-based initiatives are targeted at educating the public about the environmental consequences of excessive waste, while highlighting the cost benefits of reducing waste. The RSC would take an active role in initiating a number of the educational campaigns listed below.

2.1. In conjunction with the RSC and local civic organizations, organize periodic Zero Waste Days, similar to those organized by neighboring communities, including the Town of North Castle. On the specified day, residents would drop off their unwanted items – household furniture, clothing, e-waste, used bikes, scrap metals - at a designated location for donation or recycling.

2.2. In conjunction with the RSC and relevant civic organizations, implement an awareness program to encourage deconstruction of buildings and homes for donation to green deconstruction organizations.

2.3. In conjunction with the local schools and civic organizations, such as the Rye Garden Club, Rye Nature Center, and Little Garden Club, establish/continue volunteer programs to pick up litter in public places.

2.4. Consider adopting some or all of the recommendations contained in the 2012 Rye City

Finance Committee report on the Sanitation Department. Consider a Pay as you Throw Program to encourage recycling, home composting and to reduce costs.

2.5. Consider developing an annual community award program for recycling and reduction of waste.

2.6. Promote community composting through education and awareness programs. Emphasize the benefits of composting as a method for decreasing waste while reducing waste collection costs.

2.7. Expanding on the RSC's reusable bag campaign, initiate an education campaign to encourage the community to reduce its consumption of single-use disposables – bottled water, plastic bags, styrofoam containers - and offer solutions for using more durable products.

SUSTAINABILITY *in our* COMMUNITY

Rye Chamber of Commerce

The Rye Chamber of Commerce has supported many initiatives over the years that have focused on environmental sustainability. In 2008, we advocated for recycling bins to be purchased for our downtown shopping district. With that purchase of twenty bins, and the addition in 2012 of a solar-powered Big Belly trash compacter, Rye has a recycling rate of 70% of all trash, which is among the top rates within Westchester County.

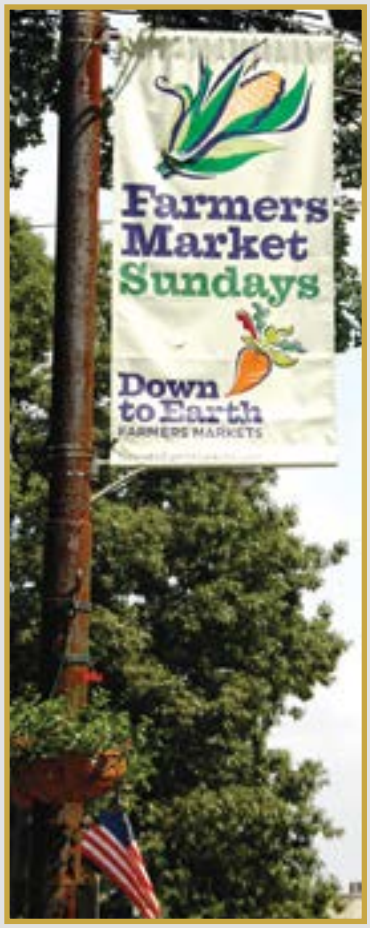
At the start of 2011, the Chamber of Commerce, in partnership with the Rye Sustainability Committee, began the process of opening dialogue within the business community to discuss the pros and cons of a ban on plastic shopping bags. By November, the business community was firmly endorsing the move, and in June 2012, the law prohibiting most plastic shopping bags went into effect, making Rye's law the first of its kind in Westchester County.

SUSTAINABILITY *in our* COMMUNITY

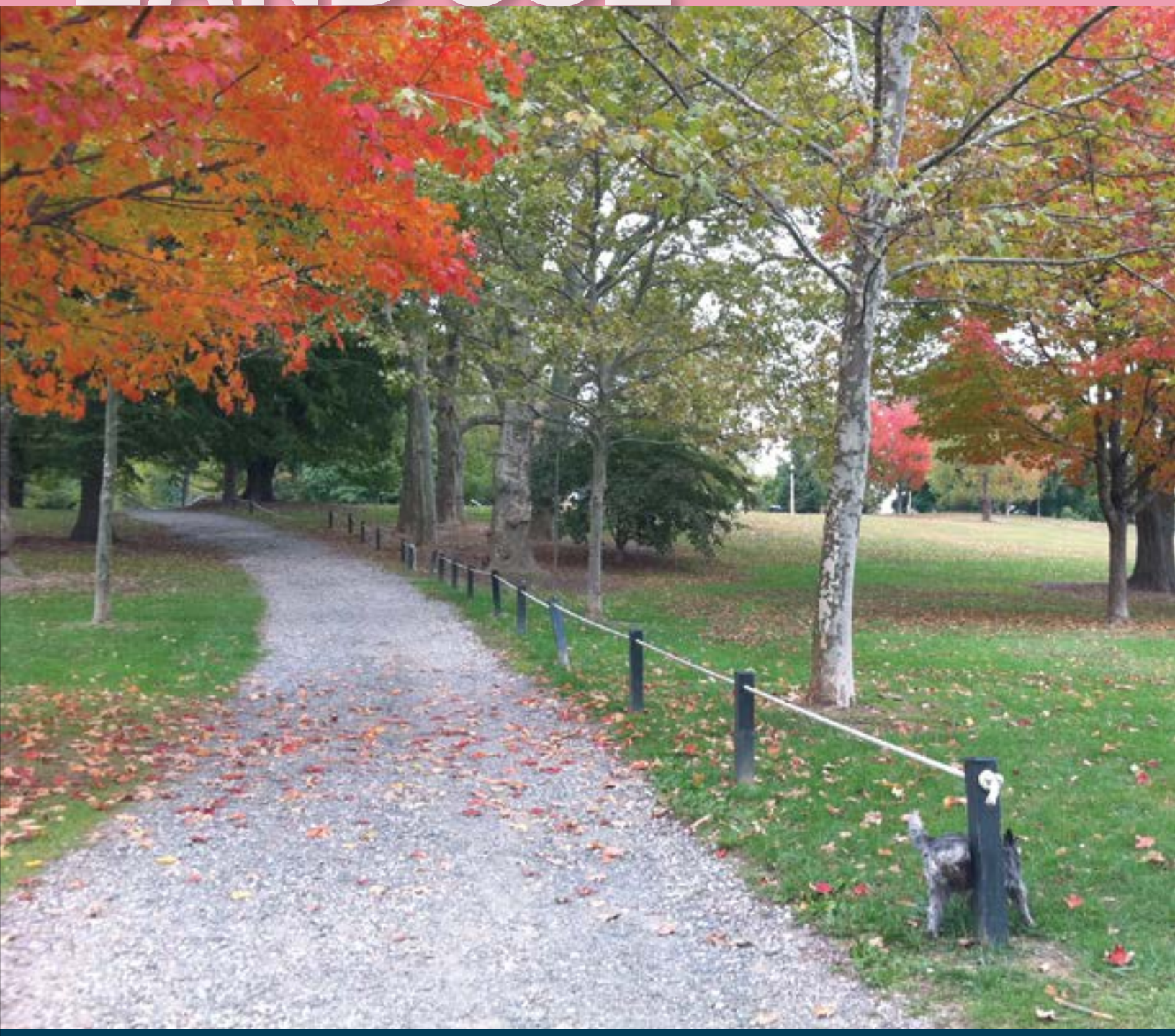
The Rye Chamber of Commerce also sponsored a "Ride or Walk to Work Day" in 2011 and 2012 to encourage the business community to leave their gas guzzlers at home. Given that spring has been a little late in arriving for 2013, we expect this program to be continued later in the year. Additionally, the Chamber has organized several clean up days over the years to be good environmentalists and neighbors.

For the last six years, The Farmers' Market has been sponsored by the Rye Chamber of Commerce. A Farmers' Market encourages reducing the carbon footprint by bringing locally farmed produce to the community and is enjoyed by many in and around Rye.

Lastly, our Rye business community has many individual businesses which have taken steps to be more environmentally sensitive. Many have replaced old fluorescent lighting with new LED lights. We even have one business whose mission is resale of previously owned clothing and items. Talk about reduce, reuse, recycle - it hits the mark!



WATER/ LAND USE



Conserve Rye's most precious asset – it's natural, open spaces – through enforcement and enhancement of existing laws, by adopting sustainable landscaping practices, and by minimizing environmental pollution. Mitigate flooding and encourage conservation of Rye's waterways and water supply through water saving measures.

WATER/LAND USE

SUMMARY

Preserving Rye's open spaces is of critical importance. Land is the source of natural and renewable resources but we - as residents, business owners, and public officials - depend on its sustained value as a real asset. The natural beauty of Rye is a source of economic strength, attracting new homeowners and businesses, while increasing property values for all.

Non-Point Source Pollution

Non-point source pollution is polluted stormwater runoff containing sediment, fertilizers and pesticides, petroleum, heavy metals, and wastewater from failing septic systems. These pollutants are often carried by runoff to streams, rivers, and Long Island Sound. They are a serious problem that can only be kept under control by changes in the way we use the land and how we maintain our homes and automobiles.

Source: WestchesterGov.com

Maintaining a clean supply of water is self-evident, but the Rye community has a special responsibility to protect its waterways, wetlands and water bodies. The City is situated within one of Westchester County's six watershed areas and is located on one of the County's two estuaries, Long Island Sound. In addition to its designation as an Estuary of National Significance, the County has deemed Long Island Sound a critical environmental area. Containing stormwater run-off from non-point source pollution is of utmost importance to the preservation of the surrounding area's wildlife, aquatic life and human health. Stormwater has been identified by the EPA as a major contributor of pollution to water sources and flooding.

While Rye remains an attractive community for its residents, it is also a popular destination for visitors, who enjoy the parks, beaches and wildlife preserves. As such, Rye's economy is dependent on preserving the health of Long Island Sound, shoreline and open spaces.

COMMUNITY ACCOMPLISHMENTS

★ Rye City's municipal committee, the **Conservation Commission Advisory Council CC/AC,** advises City Council on the regulation, use, improvement, and maintenance of conservation facilities and programs. It also advises the City Planning Commission on the impact of proposed construction on any existing wetlands.

★ The City established a **Flood Committee** to advise City Council and assist the City in the implementation of the City's flood mitigation plan.

★ The first phase of the City's flood mitigation plan, the **Bowman Avenue Spillway Sluice** gate, was installed in 2013. The sluice gate will regulate upstream water flow to help flood mitigation efforts.

★ The Rye Golf Club applies **green lawn practices** for the property by making its own compost tea fertilizer for the golf course.

★ The City hosts a **weekly farmers' market** every Sunday from November through May.

★ The Green Team of the Rye Community Synagogue has established a **Community Sponsored Agriculture (CSA) program in Rye,** offering organic produce from a local farm.

★ Local civic organizations help **educate the community about land and water** use through a variety of programs:

- **The Rye Nature Center has produced an educational video on storm water management.**
- **The Rye Garden Club's conservation committee has implemented a number of educational programs for Rye students; provides conservation tips and information with its Green Space column in the Rye Record; and educates its members on conservation by organizing conservation - related trips/meetings.**
- **EAGR has promoted green landscaping practices and advocated for an update to the City's tree ordinance.**

★ In April 2013, the RSC participated in the **Rye Arts Center, Rye Rocks Earth Day** event, promoting healthy landscaping practices, composting, and Leave Leaves Alone initiatives.

ACTION STEPS

1. Municipal

Given the devastating flooding caused by the increasing trend in powerful storms in our area, a substantive and comprehensive flood/storm water management program is essential. The City has taken first steps but more can be done to mitigate future risk. In addition, the City can set an example for the community by undertaking conservation efforts to reduce excessive water use and promote healthy landscaping practices.

1.1. Implement a storm water management program and update the storm water laws, where necessary. Work with neighboring communities to achieve an integrated plan.

1.2. Expand on the City's use of sustainable landscaping practices by committing to pesticide-free or pesticide-reduced, organic landscaping of public property. Investigate ways to create an integrated pest control management (IPM) plan for all City open spaces which would rely on pesticide-free practices for controlling pests. Promote the City's commitment to sustainable grounds maintenance by providing relevant information about the City's green practices on the City's website.

1.3. When replacing toilets in municipal buildings, consider installing high efficiency models and/or waterless urinals, which will result in saving thousands of gallons of water per year.

1.4. To restrict water flow, consider replacing the aerators on faucets, an inexpensive retrofit that conserves water and reduces costs. When replacing faucets in municipal buildings, consider installing water efficient models with sensors.

1.5. Conduct a study of land preservation zoning laws in neighboring communities to assess whether Rye's current laws are at the forefront and designed to preserve Rye's open spaces. Enforce the current zoning laws to discourage excessive paving of non-permeable surfaces and encourage tree planting.

1.6. Review current City landscaping practices to reduce the need for excessive irrigation, pesticides and/or gas powered maintenance equipment. Low maintenance landscaping, including weather-controlled irrigation systems, will reduce labor and material costs while benefiting the environment.

Green vs Gray Infrastructure

Gray Infrastructure: **the system of pipes and ditches that channel storm water.**

Green Infrastructure: **harnessing the natural processes of trees and other vegetation to carry out the functions of built systems. Examples include:**

- **Bio-swales**
- **Rain gardens/cisterns**
- **Phytoremediation**
- **Green roofs**
- **Permeable pavements**

Green infrastructure has been shown to be cheaper than Gray.

Source: e360.Yale.edu

1.7. Review the current tree permitting/conservation codes to determine whether they need to be updated.

1.8. In conjunction with encouraging tree planting and preservation on private property, launch a campaign for soliciting private donations to a City tree fund.

1.9. Plant shade trees in and around parking lots and government buildings to reduce energy required to heat and cool buildings.

1.10. Consider the use of green roofs, rain barrels, underground cisterns for City properties to reduce run-off.

Hurricane Sandy- 2012

WATER/LAND USE

2. Community-Focused Initiatives

2.1. In conjunction with the RSC and local environmental organizations, including garden clubs, EAGR, and the Rye Nature Center, initiate an awareness campaign to educate homeowners about the harmful effects of pesticide/fertilizer use on lawns, while offering natural, safe alternatives.

2.2. In conjunction with the RSC and local civic organizations, initiate an education campaign to promote tree planting on private property, emphasizing the benefits of trees for reducing flooding and absorbing carbon emissions, while increasing home property values. Some of the elements of the campaign could include:

2.2.1. Conducting a City tree inventory;

2.2.2. Developing an awards program for owners of significant trees;

2.2.3. Compiling a list of City-certified or approved arborists; or

2.2.4. Providing tree maintenance tips for private tree owners.

2.3. Encourage businesses and residents to use sustainable drainage techniques, such as rain barrels, rain gardens, bioswales and green roofs to reduce storm water runoff.

2.4. In conjunction with the RSC and local civic organizations, initiate an education campaign on composting, highlighting the benefits of composting for healthy lawn maintenance, while identifying the cost reductions that arise from decreases in lawn/household waste.

2.5. In conjunction with the RSC, local civic organizations and neighboring municipal environmental committees, launch a Leave Leaves Alone Initiative to educate the community about the financial and environmental benefits of leaf mulching-in-place programs. Provide information via the Rye City website, and/or informational pamphlets, workshops, on how residents can save time and money by shredding and leaving leaves on their lawns, and how the municipality can reduce trucking costs.

SUSTAINABILITY *in our* GOVERNMENT

Conservation Commission/Advisory Council

The CC/AC manages the City's conservation facilities and programs. It undertakes the following activities:

- **Assists in the administration of environmental regulatory activities;**
- **Provides educational materials related to environmental issues;**
- **Inventories its natural resources;**
- **Retains professional consultants, when necessary;**
- **Provides public services by fostering citizen involvement in local and regional environmental issues.**

The CC/AC fosters and encourages public participation in recycling, administration of the municipality's tree ordinance, keeps residents informed about environmental issues and assists the Friends of the Rye Nature Center in fulfilling its mission.

SUSTAINABILITY *in our* COMMUNITY

Environmental Advocacy Group of Rye (EAGR)

Since its formation in 2007, EAGR has become a grassroots force. Its mission is to identify areas of environmental concern that impact the citizens of Rye. It advocates through education and awareness campaigns, utilizing the services and full force of government and ordinances, the people of Rye, as well as other involved partner organizations.

EAGR believes that the protection of our local natural resources and environmental landscape ensures a healthier and safer community. This improves quality of life, and preserves the intrinsic character of our town for all residents.

Successful EAGR campaigns to date include:

- **Conducting a community-based environmental forum showcasing a myriad of local speakers and stakeholders in January 2008.**
- **Passage of a seasonal leaf-blower ban ordinance.**
- **Aiding in the installation of recycling units in downtown Rye.**
- **Conducting an awareness campaign on the dangers of lawn pesticides.**
- **Holding a 'Candidate's Forum' in 2009 to discuss local candidates' positions on environmental and other issues.**
- **Publishing *"Six Easy & Inexpensive Steps the Homeowner Can Take to Help Reduce Flooding"*.**
- **Mitigating invasive vine proliferation along Playland Parkway.**
- **Encouraging the observation of Earth Hour 2010.**
- **Producing and distributing a '*Green Homes Tips*' tri-fold brochure.**
- **Advocating for an improved and strengthened City-wide tree ordinance.**

SUSTAINABILITY *in our* COMMUNITY

Friends of Rye Nature Center (FRNC)

The FRNC is a non-profit organization devoted to environmental education, conservation, and advocacy in Rye and its surrounding communities. In addition to managing and operating the RNC, the City of Rye's 47-acre forest and wildlife sanctuary, the FRNC provides environmental programs and nature interpretation to over 12,000 visitors annually. The FRNC has direct partnerships with both Rye City and other local school districts to provide yearly nature and science study tours for elementary and middle school students.

Additional initiatives include:

- *Forest Conservation.* In 2006, the FRNC worked with the DEC to create a Forestry Stewardship Plan to serve as a blueprint for managing the City's 47 acres. In 2011, the FRNC began Project Regeneration, a long-term conservation endeavor made possible through a grant from Con Edison. The first phase of this project included enclosing four acres of woodland at the RNC with a fence system to protect and preserve it from over browsing deer. In the spring of 2013, new natives were planted in this area and a model forest walk was created with interpretative signage to educate visitors about forest regeneration.

- *Storm Water Management.* The FRNC has taken several steps to educate Rye residents about best practices for storm water management. Through a grant from the Westchester Community Foundation, the FRNC created an educational video, *Flood Control: What You Can Do.* In addition, the FRNC is in the process of finishing a rain garden and green roof demonstration on site to show visitors what they can do to control storm water.
- *Decreasing Nature Deficit in Children.* In 2009, the first phase of *Nature's Playground* was begun on site with plans to complete the final phase in spring 2013. In addition, the FRNC has collaborated with the Inner-City Scholarship Fund to bring kids from underprivileged, urban areas to summer camp each year for the last five years. The FRNC also provides numerous local children with scholarships to attend camps, workshops, and programs.
- *Supporting Sustainable Consumer Practices.* In 2004, the FRNC launched an initiative, *Keep the Green in Rye,* to educate residents about using reusable bags for shopping. Bags were made available at various retail locations in the City and were available for purchase at the Nature Center. This year, after the RSC successfully worked to have the City pass the Retail Shopping Bag Ordinance, the FRNC created another reusable bag for consumers.

COMMUNITY AWARENESS/ OUTREACH

Provide open communication between Rye City Hall and Rye residents through adoption of the Rye Sustainability Plan and with the creation of a dedicated, comprehensive sustainability page on ryeny.gov. Foster and encourage a lifestyle that embraces sustainability principles through educational programs sponsored by the Rye Sustainability Committee and/or local civic organizations.

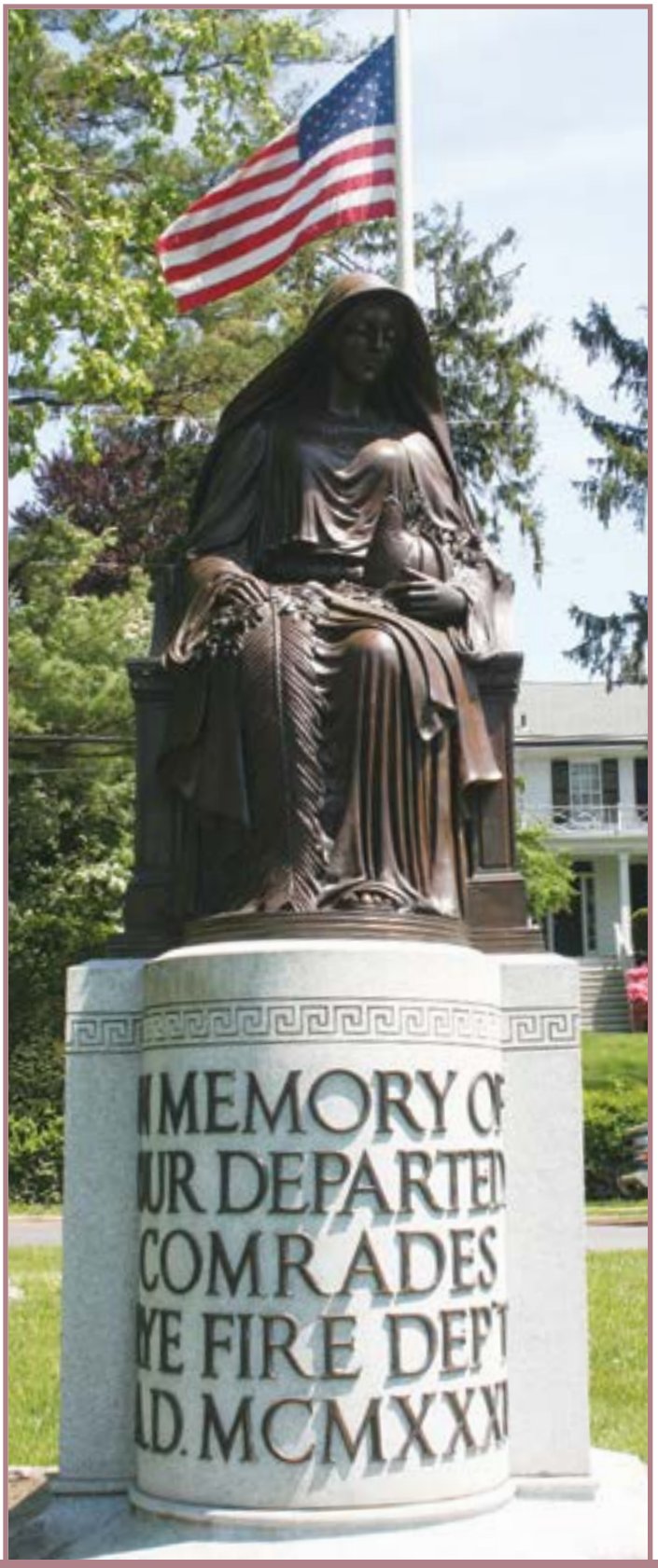
COMMUNITY AWARENESS/OUTREACH

SUMMARY

In order for Rye to become a more sustainable community, outreach and education are essential. A main focus of the RSC is to foster an open dialogue between the community and City Hall. The RSP will be the foundation for sparking this dialogue and engaging residents and employees to communicate goals, suggestions and solicit feedback. One of the most important components of the RSP is the contribution to the Plan from numerous civic organizations, municipal committees, and educational and religious institutions. These contributions underscore the collaborative nature of this document, ensuring participation on sustainability issues among every community group.

One of the first initiatives organized by the RSC was to host a Mayor's Forum in March 2011. In this setting, the community gathered to learn about sustainability and how it relates to the Rye community. Participants included members of the business community, residents and public officials. All joined in a discussion about appropriate initiatives. From this starting point, the RSC has reached out to Rye residents and local organizations to support numerous activities, such as the reusable bag initiative and launch of the "Green Screen" film series.

Moving forward, the RSC intends to continue with community outreach initiatives, including workshops on energy efficiency, pesticide use, trees, green building practices and many other areas of interest to our community. The RSC site, located on Ryeny.gov will provide the community with resources, links and information about local events.



COMMUNITY ACCOMPLISHMENTS

★ The City has completed the **Rye Sustainability Plan** to provide its citizens with a framework for achieving critical environmental goals.

★ The City has a dedicated page for **sustainability issues on the ryeny.gov site.**

★ Residents and City Council are kept informed through periodic updates from the RSC.

★ The **RSC has promoted awareness through a number of initiatives and events:**

- **Hosted a Mayor's Forum to introduce the concept of sustainability and highlight sustainability efforts within Westchester County.**
- **Created an informational pamphlet about the committee and its mission.**
- **Members have participated in a variety of "Eye on Rye" productions to inform the public about sustainability and environmental issues.**
- **Committee members have participated in a number of community events to provide information about sustainability issues.**
- **Committee members have met with a number of organizations to provide information and solicit feedback.**
- **The RSC has collaborated with other community sustainability committees to learn best practices and educate residents on common issues.**

★ In partnership with Rye Country Day School, the RSC launched the first **Rye Green Screen,** with its screening of *"Bag It"*. The 2013 Green Screen featured *"No Impact Man"*.

★ In 2012, the RSC launched the first **RSC Celebrates Earth Day,** with a number of activities, including a Sound Shore Communities' Joint No Idling Day, a declaration by City Council to enforce the existing no-idling laws, and the launch of Rye's retail shopping bag law.

★ In 2013, the RSC marked Earth Day by participating with the Rye Arts Center for its ***RAC Rocks Earth Day.*** The RSC joined with the CC/AC to promote healthy green landscaping practices, focusing on healthy lawns, composting, LLA, and wetlands preservation.

★ In 2013, the Rye Country Day School was one of 64 schools nationwide that received recognition as a **U.S. Department of Education Green Ribbon School.** The award recognizes schools where staff, students, officials and communities have worked together to produce energy efficient, sustainable and healthy school environments and to ensure the environmental literacy of graduates.

ACTION STEPS

1. Municipal

With the assistance of the RSC, the City can promote its accomplishments on sustainability issues while providing important information. There are a number of ways the RSC can promote awareness and educate the community.

1.1. Expand the existing RSC page on the Ryeny.gov site to include:

- **1.1.1.** an outline of the Rye Sustainability Plan that includes periodic progress reports;
- **1.1.2.** news related to sustainability and environmental issues;
- **1.1.3.** helpful tips;
- **1.1.4.** an events calendar;
- **1.1.5.** links to green businesses and contractors; and/or
- **1.1.6.** a questionnaire for the public to solicit feedback.

1.2. With assistance from the RSC, create "Go Green" checklist(s) for residents and business owners to help make their environment more sustainable. The lists would include simple tasks for individuals and organizations to improve overall efficiency while reducing their environmental impact. Target areas could include basic tips, such as improving energy efficiency, reducing waste, increasing recycling and reducing the amount of chemicals used in the home or business. The checklists would be available to download on the RSC page of Ryeny.gov.

1.3. Create an electronic Rye Sustainability newsletter to inform the public about relevant news and events.

1.4. Enhance and improve online payments for City services.

1.5. Institute "Go Green" events periodically to promote a specific sustainability topic. Possible topics could include: composting, how to make homes more energy efficient, grease recycling, options for heating using solar energy, insulating private homes.

1.6. Create strategic partnerships with businesses to educate owners on the benefits of energy efficiency and conservation.

1.7. Form partnerships with neighboring communities, similar to the Northern Westchester Energy Action Consortium (NWEAC) and the Southern Westchester Energy Action Consortium (SWEAC).

1.8. Use current community events to promote specific sustainability topics.

1.9. Recognize significant environmental achievements made by citizens, organizations or the business community through an annual sustainability award.

2. Community-Focused Initiatives

Our schools, local organizations, businesses and residents are well equipped to share best practices and collaborate on important sustainability topics. The RSP will act as a resource from which groups can select issues to tackle. City Council and the RSC will provide guidance and can participate in various initiatives. The goal is to increase and strengthen public/private partnerships on sustainability issues so that future generations can enjoy the benefits of this community.

The boxes below highlight past community accomplishments and should provide inspiration for future initiatives.


Migliorelli
FARM


RYE SMOKE SHOP
T.D.
LOTTO
CIGARS

SUSTAINABILITY *in our* SCHOOLS

Rye City School District

- Mandated use of green cleaning solutions to replace harsh chemicals
- Mandated avoidance of non-organic lawn care products and herbicides
- Mandated avoidance of pesticides in favor of preventative maintenance programs
- Mandatory recycling of newspapers, cardboard, aluminum, glass and plastic
- Increased use of paperless communications to home and community, use of Google app documents, as well as web-based shared databases and applications to avoid use and transfer of paper
- Arrangements for regular safe removal of unneeded chemicals and recycling of used light bulbs
- Auto light turnoffs in some school classrooms
- Converted to automated shut-off water faucets in most student lavatory sinks
- Added recycling containers and student-lead water bottle recycling program at MS
- School lunch program elimination of styrofoam cups/trays
- Added water bottle fill-up fountains at the Middle and High Schools
- Added retention basins at Milton Elementary School to reduce storm drain runoff and improve drainage of water prior to reaching L.I. Sound
- Added gas service at the Middle and High Schools to reduce use of oil and switch to gas heating

Milton Elementary School

Milton School has long had an active Environmental Committee, supplementing the general curriculum with environmental education. The goal is for children to feel empowered so they understand their individual roles in taking collective action on environmental issues. Parent volunteers create lesson plans, assemblies, field trips and recess programs about climate change, recycling, pollution and other environmental issues. It is truly a collaborative effort in that we organize different programs and take on projects with the principal, teachers, students and the Milton Student Council.

Initiatives have included the following:

- Ecological Footprinting Assemblies for 4th & 5th grades
- Planning & executing the Milton Sustainable Garden
- Reduce & Reuse Book Swaps for America Recycles Week and Earth Week
- 3rd grade field trips to the Westchester Recycling Facility
- Walk to School for Earth Week
- Holiday Card Recycling to benefit St. Jude's Ranch, a charity for abused and abandoned children
- Printer Cartridge and Electronic Recycling Fundraisers
- Anti-vehicle idling rallies
- Daffodil planting in front of the school
- Sales of reusable stainless steel water bottles
- Grades 3, 4 &-5 lesson plans on how damaging bottled water is to the environment
- Rye Garden Club lesson plans for grades K and 2
- "Bash The Trash" Recycling Assembly
- K-5 visits to the Veggie Van, a mobile classroom that educates on pollution, recycling and climate change
- "Plastic Beach" trash collection for Earth Week followed by assembly on the pervasiveness of plastic in our lives by Grassroots Environmental
- Crayon recycling
- Implementing paper and plastic recycling at Milton
- Working with food services to find alternatives to polystyrene lunch trays

SUSTAINABILITY *in our* SCHOOLS

Rye Country Day School (RCDS)

Starting in 2005 with the Headmaster's decision shift to organic lawn, shrub, and tree care, RCDS has pursued an expanding sustainability initiative on its campus. Over the past seven years, the initiative has steadily garnered support from faculty and staff, students, parents, trustees, and the maintenance department, resulting in a comprehensive approach to implementing sustainable practices while connecting the sustainability to the curriculum and student activities. Highlights of the RCDS sustainability program have focused on the following areas:

- *Campus Gardening* started with organic lawn care in response to a change in New York State's Education laws that eliminated pesticide use on school grounds. Since that change, RCDS has installed two school garden sites, certified its campus housing as wildlife habitats, shifted to use of native plants for landscaping, and started a composting program.
- *Energy:* Several facilities projects, including two supported by grants, have significantly reduced energy use on the RCDS campus. NYSERDA rebates have partially supported the campus-wide conversion to low energy light fixtures and the installation of a 23kW solar energy system (2011). Since 2009, the school has contracted with Ecova to conduct annual energy audits that include practical recommendations for energy savings. In 2012, the School installed two dual fuel, energy efficient boilers that use either oil or natural gas. For the past four years RCDS has involved students, faculty, and staff in a month-long energy reduction competition, the National Green Cup Challenge, which has produced substantial energy reductions and savings. Finally, RCDS is participating in a grant proposal that would bring two electric car charging stations to its campus.
- *Waste Reduction:* In an effort to reduce the use of other resources, RCDS has moved from paper mailings to digital communications of report cards, weekly E-notes and campus news, and most recently, its admissions application. Students and faculty have encouraged more double-sided copying to save paper, and printed publications use paper from sustainable sources. Also the facilities department has installed automated faucet and toilet controls and irrigation system rain gauge shutoffs to reduce water use at school.
- *Food Service:* RCDS' food service provider, Flik Independent Schools, has supported the School's sustainability initiative by seeking more locally-sourced food suppliers, significantly reducing the use of plastic products including bottled water, recycling vegetable oil, and using produce from the school garden. As a result of these efforts, RCDS food services was presented with the Green Restaurant Award with 2 Stars in 2010.
- *Recycling,* an integral part of the sustainability initiative from the start, includes paper, cardboard, glass/cans, and plastic. Since 2009, student groups have led catalog cancellation drives, as well as used cell phone and battery collections. RCDS regularly recycles all of its used light bulbs, printer cartridges, and electronic waste through Werecycle. The Upper School continues to collect used textbooks for re-use or donations, while a task force explores the growing availability and use of digital textbooks.
- *Awareness/Education:* Throughout this initiative efforts have successfully incorporated sustainability in the educational programs for students, faculty, and parents. Faculty in all three divisions and across disciplines have developed curricular units focusing on sustainability, including writing persuasive letters to encourage

SUSTAINABILITY *in our* SCHOOLS

recycling, collecting and counting 100 recyclable items, raising trout in the classroom for release, visiting local water treatment plants, exploring Long Island Sound and Blind Brook, and studying the latest electric and hydrogen fuel cell cars. Student clubs produce a green newsletter, help with campus recycling, and participate in coastal cleanup days. Faculty members have participated in various professional development activities focused on sustainability through NYSERDA, the Westchester Green Schools Alliance, and various on-campus workshops. The RCDS Parent Environmental Committee has sponsored an "Eco-Conversations" speakers series, "Eco-Excursions" for parents, weekly Eco Tips in Enotes, screening of the movie "Bag It", and the creation of "No Idling" safety vests worn by staff directing arrival and dismissal traffic.

With a strategic Sustainability Plan in place, RCDS continues to explore exciting, innovative ways to advance this important initiative on its campus and in the classrooms – all in an effort to ensure that RCDS students are responsible stewards of our planet.

SUSTAINABILITY *in our* COMMUNITY

Rye Garden Club (RGC)

The RGC, a nearly 100-year old organization, is made up of 60 active club members and 37 sustaining and affiliate members. They share a love of gardening and the natural world and are dedicated to the Garden Club of America's mission.

Ongoing work in town in accordance with this mission includes:

- *Funding and organizing a program for the public each year on conservation or gardening topics.* 2012's presentation was a tree identification and care program led by two arborists at the Rye Nature Center. In 2010, the RGC sponsored a program at the Rye Free Reading Room led by Gray Russell, an environmental coordinator in New Jersey. He led a program for the public about recycling, composting, grass-cycling, water conservation and eco-friendly yard care. In 2009, the Club funded a talk by Douglas Tallamy, author of Bringing Nature Home on the importance of planting native species to support wildlife and a healthy eco-system. In 2008, a lecture by Brian Hallowell on the locavore movement was sponsored.
- *A comprehensive conservation education program that is offered to Rye nursery and elementary schools.* For nursery and kindergarten, RGC presents *Drip and Drop,* an interactive lesson of stories and songs about the water cycle that helps teach why water is a precious resource. Second grade classrooms work with RGC's *Enviroscape* in an interactive lesson about water pollution. The *Enviroscape* is a model of a watershed area much like Rye to which students add pollutants and then add "rain" and watch the effects of pollution on water bodies and ground water. In the 2011–2012 school year, *Drip and Drop* was presented to 300 children. The *Enviroscape* lesson was presented to 200 children. Additionally, the *Polly Paper* exhibit travels to schools each year. The program guides children ages K-5 through a colorful and lively exhibit illustrating the process of paper recycling, from its collection at curbside to its remanufacture as new paper products. Over 300 children have met Polly in area schools.

- *Sponsoring elementary school field trips to the Materials Recovery Facility in Yonkers,* to see and learn about the recycling processes in our area.
- *Writing an environmental stewardship column in each edition of the local paper entitled, "Green Space", since 2008.* Topics have included, gardening with native plants, recycling tips, alternatives to chemical fertilizers, the importance of trees, how to be a locavore, the effects of pesticides, ways to reduce energy use.
- *Display at the Jay Heritage Center's carriage house for free touring, the "Home Green Home" Dollhouse.* This award-winning dollhouse was handmade by RGC members. Its landscape demonstrates green building and decorating techniques, water run-off mitigation and practices that can be incorporated into the home, property and daily life to conserve resources and promote sustainability.
- *Planting and maintaining planted pots* along Purchase Street, Purdy Street and Rye Train Station.
- *Maintaining the gardens* at the Rye Free Reading Room, the Square House and the Knapp House traffic island.

SUSTAINABILITY *in our* COMMUNITY

Rye Presbyterian Church (RPC)

Reduce – reuse – recycle: the three sides of sustainability. The RPC Thrift Shop is a wonderful example of all three. Donations come from community members every week. Purchases are bagged in donated bags or shoppers bring their own bags. Numerous donations have cycled through the Thrift Shop two or three times; when someone is finished using an item they purchased at the Thrift Shop, they often re-donate it. The Thrift Shop does not accept clothes or very large items, but takes almost any other thing that is found in the home.

Another wonderful aspect of the Thrift Shop is that our volunteers are truly intergenerational, ranging in age from their 30's to their 90's. It is a way for older people to perform a valuable service, and for many it is a valued social experience, one that keeps them involved in the community. The shoppers come from all socioeconomic backgrounds. Shopping here is fun for both volunteers and shoppers. This adds a truly positive spin to the idea of reusing.

The last, crucial part of the Thrift Shop's mission is that all proceeds are donated in the form of grants to area non-profits each year, with an occasional international or emergency donation as well. The grants are given out at a luncheon in June, which gives representatives from local organizations a wonderful opportunity to meet each other and network. Thus, the money we make at the shop is recycled into the community. For the last two years the Thrift Shop has given out over $50,000, and we are on track to do the same in 2013.

The RPC leadership has been very supportive of the Thrift Shop, which has more than doubled its revenues over the past eight years. Other sustainability efforts have been discussed and implemented at the church, though the Thrift Shop is the most visible. The best part about the Thrift Shop is that it makes 'being green' attractive and enjoyable for those in our community and beyond.

Community Synagogue of Rye

As Jews and as God's partners we are obligated to repair our world. Through observing and illuminating this basic tenet of our faith, and through education and action, we will lead and motivate our community to protect and heal our waters, air, and lands.

A – We will cultivate environmental awareness through discussion, seminars, writings, projects, and action.

S – We will encourage the sharing of ideas and best practices within our community and with other environmental organizations.

P – We will promote participation at every age, from the simple act of changing a light bulb, stopping to pick up a piece of trash, or carpooling, to changing corporate policies and engaging in local, state, or global initiatives.

I – We espouse immediacy and will commit to presenting actionable and practical strategies – now.

R – We strongly believe that the three R's apply now more than ever and will motivate people to Reduce, Reuse, and Recycle.

E – We know that education is the catalyst for change. As we create programs, encourage participation, and promote action, we will educate our community not just on "what" to do, but on "why" we need do it, both as Jews and as citizens of the world.

IMPLEMENTATION & TRACKING

SUMMARY

The Implementation and Tracking Section provides a summary of all suggested action steps, with responsible parties and estimated timeframes for each item. The tables below are grouped by the sectors covered in the Sustainability Plan: Energy, Transportation, Waste Reduction & Recycling, Water/Land Use, and Community Awareness/Outreach. Projects are estimated based on their length – on-going, short, medium or long term, with estimates for each noted in the section below. The time period for a specific project can include time needed to assemble working groups, obtain funding and draft any necessary reports. In addition, they may be revised depending on changes in priorities or circumstances.

PROGRESS TABLES

Notes:

- M: Municipal
- C: Community
- Timeframes:
  - Short Term: 1 – 3 years
  - Medium Term: 3 – 5 years
  - Long Term: 5 + years

ENERGY

INITIATIVES	RESPONSIBLE PARTIES	TIMEFRAME			
		ON - GOING	SHORT TERM	MEDIUM TERM	LONG TERM
1. Reduction in GHG gas emissions by specified target	**M/C**		**X**		
2. Energy Efficiency Retrofits of Municipal Facilities					
2.1. Energy efficient upgrades of municipal facilities	**M**		**X**		
2.2. Replace "Exit" signs with LED version	**M**		**X**		
2.3. Evaluate and update heating controls, where necessary	**M**	**X**			
2.4. Implement an energy tracking and management system	**M**			**X**	
2.5. Develop cool roofs; consider green roofs for parking garage projects	**M**				**X**
2.6. Implement and promote a green purchasing policy for new equipment and appliances	**M**			**X**	
2.7. Install computer shut-down software.	**M**			**X**	
2.8. Encourage the retrofit of green building technologies	**M**		**X**		
3. Energy Efficient Upgrades/Retrofits of Lighting					
3.1. When upgrading street, sidewalk, traffic lighting consider replacing with state-of the-art energy efficient lighting.	**M**		**X**		
3.2. Retrofit municipal lighting fixtures and/or replace lamps with CFLs or LED technology (or better, as technology advances).	**M**	**X**			
3.3. Where necessary, install lighting occupancy sensors in all municipal buildings.	**M**	**X**			
3.4. Decrease average daily time for street lighting operation.	**M**		**X**		
3.5. Institute a "lights out at night when not in use" policy in municipal buildings.	**M**		**X**		
3.6. Replace municipal holiday/decorative lighting with energy efficient lighting, such as LEDs.	**M**		**X**		
4. Green Building Practices					
4.1. Conduct a study of municipal and county green building codes.	**M**			**X**	
4.2. Consider drafting legislation requiring that every new residence sold or transferred must obtain a HER	**M**			**X**	
4.3. Provide a system of recognition for new construction that exceeds minimum standards for energy conservation.	**M**			**X**	
4.4. Make training programs on green building/energy code procedures and financing available to City staff.	**M**			**X**	
4.5. Include exceptions in the building codes for experimental architectural and energy innovations	**M**			**X**	
4.6. Institute an accelerated processing service for projects that demonstrate a higher energy efficiency and/or LEED standard than required by the City code.	**M**			**X**	
4.7. Consider the requirement of owner contracted third party inspections to certify all construction meets local and statewide energy codes.	**M**			**X**	
5. Renewable Energy					
5.1. Investigate the feasibility of installing solar photovoltaics on municipal facilities.	**M**			**X**	
5.2. Investigate the feasibility of installing solar hot water systems in municipal facilities.	**M**			**X**	
5.3. Promote community commitment to renewable energy, green building and energy efficiency through various education programs.	**M/C**		**X**		

TRANSPORTATION

INITIATIVES		RESPONSIBLE PARTIES	TIMEFRAME			
			ON - GOING	SHORT TERM	MEDIUM TERM	LONG TERM
1. Municipal						
1.1	Purchase low sulfur biodiesel for use in Rye's municipal fleet.	**M**		**X**		
1.2	Encourage car-pooling, van-pooling, and mass transit use by municipal employees.	**M**		**X**		
1.3	Provide municipal employees with public transport travel passes. Provide cycle facilities.	**M**		**X**		
1.4	When purchasing new municipal vehicles, consider purchasing fuel efficient, smaller, or hybrid vehicles.	**M**	**X**			
1.5	Offer incentives to municipal employees for driving fuel-efficient vehicles, such as preferred parking spaces or reduced parking fees at municipal parking lots.	**M**		**X**		
1.6	Enforce anti-idling laws for City owned vehicles	**M**	**X**			
1.7	Consider the inclusion of a small shuttle bus or trolley route from the Rye train station to Harrison train station.	**M**		**X**		
2. Community-Focused Initiatives						
2.1	Infrastructure improvements targeted at enhancing pedestrian activity.	**C/M**		**X**		
2.2	Infrastructure improvements targeted at enhancing biking activity	**C/M**		**X**		
2.3	Provide electric plug-in stations with dedicated parking at the train station.	**M**			**X**	
2.4	Offer incentives for driving fuel-efficient vehicles	**M**		**X**		
2.5	Encourage more reliance on walking and biking by raising parking prices and/or extending the hours of operation in public parking lots.	**M**		**X**		
2.6	Step up enforcement of existing no-idling laws	**M**	**X**			
2.7	Create an education program or programs to encourage more pedestrian activity for school children and their caregivers by promoting the health benefits of walking or biking to school.	**C**		**X**		
2.8	Encourage car-pooling to school by creating an awareness program in the schools.	**C**		**X**		
2.9	Continue partnerships with neighboring communities to advocate for greater enforcement of no-idling laws and promote walk to school programs.	**C**		**X**		

WASTE REDUCTION/RECYCLING

INITIATIVES	RESPONSIBLE PARTIES	TIMEFRAME			
		ON - GOING	SHORT TERM	MEDIUM TERM	LONG TERM
1. Municipal					
1.1 Promote Rye's recycling record, using its reputation to encourage continued recycling programs and to set more aggressive goals/targets.	M	X			
1.2 Increase the number of recycling bins/Big Bellies throughout Rye.	M		X		
1.3 Institute a municipal office waste management system targeted at reducing excess waste of paper, supplies and bottled water, while cutting costs.	M		X		
1.4 Evaluate municipal purchasing policies of cleaning products to identify areas where green products can be used. Use low VOC products.	M		X		
1.5 When undertaking a painting project, use low VOC paint.	M		X		
1.6 Institute an educational program to encourage restaurants and residences to recycle grease waste.	M		X		
1.7 Consider implementing an awareness campaign about the harmful environmental effects of specified harmful chemicals. Publicize the City's decision, encouraging Rye residents to follow City Hall's lead.	M		X		
1.8 Provide information on the ryeny.gov site regarding County/State recycling laws, composting education programs, green products, environmentally preferred local vendors, and other relevant information pertaining to waste reduction.	M		X		
2. Community-Focused Initiatives					
2.1 Organize periodic Zero Waste Days.	C		X		
2.2 Implement an awareness program to encourage deconstruction of buildings and homes for donation to green deconstruction organizations.	C		X		
2.3 Establish/continue volunteer programs to pick up litter in public places.	C		X		
2.4 Consider adopting some or all of the recommendations contained in the 2012 Rye City Finance Committee report on the Sanitation Department. Consider a Pay as you Throw Program to encourage recycling, home composting and to reduce costs.	M		X		
2.5 Consider developing an annual community award program for recycling and reduction of waste.	C/M		X		
2.6 Promote community composting through education and awareness programs.	C/M		X		
2.7 Initiate an education campaign to encourage the community to reduce its consumption of single-use disposables and offer solutions for using more durable products.	C/M		X		

WATER/LAND USE

	INITIATIVES	RESPONSIBLE PARTIES	TIMEFRAME			
			ON-GOING	SHORT TERM	MEDIUM TERM	LONG TERM
1.	**Municipal**					
1.1	Implement a storm water management program and update the storm water laws, where necessary.	**M**		**X**		
1.2	Expand on the City's use of sustainable landscaping practices by committing to pesticide-free or pesticide-reduced, organic landscaping of public property.	**M**		**X**		
1.3	When replacing toilets in municipal buildings, consider installing high efficiency models and/or waterless urinals.	**M**		**X**		
1.4	To restrict water flow, consider replacing the aerators on faucets, and when replacing faucets in municipal buildings, consider installing water efficient models with sensors.	**M**		**X**		
1.5	Conduct a study of land preservation zoning laws in neighboring communities to assess whether Rye's current laws are at the forefront and designed to preserve Rye's open spaces. Enforce the current zoning laws to discourage excessive paving of permeable surfaces and encourage tree planting.	**M**		**X**		
1.6	Review current City landscaping practices.	**M**		**X**		
1.7	Review the current tree permitting/conservation codes to determine whether they need to be updated.	**M**			**X**	
1.8	Launch a campaign for soliciting private donations to a City tree fund.	**M**		**X**		
1.9	Plant shade trees in and around parking lots and government buildings to reduce energy required to heat and cool buildings.	**M**		**X**		
1.10	Consider the use of green roofs, rain barrels, underground cisterns for City properties to reduce run-off.	**M**		**X**		
2.	**Community-Focused Initiatives**					
2.1	Initiate an awareness campaign to educate homeowners about the harmful effects of pesticide/fertilizer use on lawns, while offering natural, safe alternatives.	**C**		**X**		
2.2	Initiate an education campaign to promote tree planting on private property, emphasizing the benefits of trees for reducing flooding and absorbing carbon emissions, while increasing home property values.	**C**		**X**		
2.3	Encourage businesses and residents to use sustainable drainage techniques to reduce storm water runoff.	**C**		**X**		
2.4	Initiate an education campaign on composting, highlighting the benefits of composting for healthy lawn maintenance, while identifying the cost reductions that arise from decreases in lawn/household waste.	**C**		**X**		
2.5	Launch a LELE initiative. Provide information via the Rye City website, and/or informational pamphlets, workshops.	**C/M**		**X**		

COMMUNITY AWARENESS/OUTREACH

INITIATIVES		RESPONSIBLE PARTIES	TIMEFRAME			
			ON-GOING	SHORT TERM	MEDIUM TERM	LONG TERM
1. Municipal						
1.1	Expand the existing RSC page on the ryeny.gov site.	**M**		**X**		
1.2	With assistance from the RSC, create "Go Green" checklist(s) for residents and business owners to help make their environment more sustainable. The checklists would be available to download on the RSC page of Ryeny.gov.	**M**		**X**		
1.3	Create an electronic Rye Sustainability newsletter to inform the public about relevant news and events.	**M**		**X**		
1.4	Enhance and improve online payments for City services.	**M**		**X**		
1.5	Institute "Go Green" events periodically to promote a specific sustainability topic. Possible topics could include: composting, how to make homes more energy efficient, grease recycling, options for heating using solar energy, insulating private homes.	**M**		**X**		
1.6	Create strategic partnerships with businesses to educate owners on the benefits of energy efficiency and conservation.	**M**		**X**		
1.7	Form partnerships with neighboring communities, similar to the Northern Westchester Energy Action Consortium (NWEAC) and the Southern Westchester Energy Action Consortium (SWEAC).	**M**			**X**	
1.8	Use current community events to promote specific sustainability topics.	**M**		**X**		
1.9	Recognize significant environmental achievements made by citizens, organizations or the business community through an annual sustainability award.	**M**		**X**		

APPENDICES

RESOURCES/END NOTES

General

1. Government Sites

Federal

Environmental Protection Agency (EPA): http://www.epa.gov/

- **Guide for Local Governments: http://www.epa.gov/region2/sustainability/greencommunities/**
- **Green Communities page, providing information on the Five Steps to Community Sustainability, sustainability programs (green business and building green): http://www.epa.gov/greenkit/index.htm**
- **Green Living page: http://www.epa.gov/gateway/learn/greenliving.html**

Department of Environmental Protection (DOE): http://energy.gov

Energy Star: http://www.energystar.gov/

- **EPA/DOE program designed to help residents and businesses save money while protecting the environment through energy efficient products and practices.**
- **List of ENERGY Star products: http://www.energystar.gov/index.cfm?fuseaction=find_a_product.**
- **Comprehensive FAQ page, searchable by topic: http://energystar.supportportal.com/ics/support/default.asp?deptID=23018**

White House, Climate Change: http://www.whitehouse.gov/energy/climate-change

State

NY State Energy Research and Development Authority (NYSERDA):

- **Main page: http://www.nyserda.ny.gov**
- **Funding opportunities: http://www.nyserda.ny.gov/Funding-Opportunities.aspx**

NY State Department of Environmental Conservation (NYDEC):

- **Main page: http://www.dec.ny.gov/**
- **Information on energy conservation, climate change, sustainability planning and renewable energy: http://www.dec.ny.gov/60.html**

Westchester County Government:

- **Environment page: http://environment.westchestergov.com/**

2. Organizations

U.S. Green Building Council (USGBC): https://new.usgbc.org/

A nonprofit organization committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings. USGBC works toward its mission of market transformation through its LEED green building program, robust educational offerings, a nationwide network of chapters and affiliates, the annual Greenbuild International Conference & Expo, and advocacy in support of public policy that encourages and enables green buildings and communities.

Low Impact Development Center: http://www.lowimpactdevelopment.org/

A non-profit organization dedicated to the advancement of Low Impact Development technology. Low Impact Development is a comprehensive land planning and engineering design approach with an emphasis on storm-water management. Information on tools for creating a low-impact environment, including green roofs, permeable pavers, rain barrels, cisterns, and more.

Star Community Index: http://www.starcommunities.org/

Developed by ICLEI, the USGBC and the Center for American Progress, STAR provides a new, standardized framework for local governments to plan, track and promote their environmental and sustainability work. STAR is intended to serve as a rating system, not a ranking system. It will provide local governments with a system to evaluate their own progress and recognize their achievements through a continuous improvement process.

The Natural Step: http://www.thenaturalstep.org/en

Not-for-profit dedicated to education, advisory work and research in sustainable development. The Natural Step has worked with thousands of corporations, municipalities, academic institutions and not-for-profits to reduce costs as well as ecological and social impacts. Engages with business to integrate sustainability principles into their core strategies, decisions, and operations. Contains information on services, research, and education activities.

Sustainable Hudson Valley: http://www.sustainhv.org/

Includes a very comprehensive list of case studies and resources page with links to local sustainability organizations.

How Green is My Town: http://www.howgreenismytown.org/index.html

HGIMT is an EPA-award winning environmental assessment program designed to help local governments in their efforts to address issues of climate change, sustainability and environmental health. It provides educational material, a useful checklist, and helpful tools for building sustainable local governments, schools and businesses.

Sustainable Communities Online: http://www.sustainable.org/

Sustainable Communities Online is the newly revised, updated, and redesigned website formerly known as the Sustainable Communities Network (SCN) website which was developed by a broad coalition of organizations around the United States in the mid-1990s. The intent of the SCN was to pool information on sustainability to make it more readily accessible to the public. CONCERN, Inc. and the Community Sustainability Resource Institute managed the SCN from 1993–2001 and CONCERN has managed it since then.

3. Local Organizations

Rye Nature Center: http://www.ryenaturecenter.org/

Rye Garden Club: http://ryegardenclub.org

Jay Heritage Center: http://www.jaycenter.org

Marshlands Conservancy: http://marshlandsconservancy.com/

Rye Chamber of Commerce: http://www.ryechamberofcommerce.com/

Christ's Church: http://ccrye.org/

Rye Presbyterian: http://ryepc.com/

Community Synagogue: http://comsynrye.org/

Church of the Resurrection: http://www.resurrectionrye.com/

APPENDICES

RESOURCES/END NOTES

Rye YMCA: www.ryeymca.org/

Rye Free Reading Room: http://www.ryelibrary.org/

Rye Arts Center: http://ryeartscenter.org/

Little Garden Club of Rye: http://lgcofrye.org/

Friends of Read Sanctuary: http://friendsofreadwildlifesanctuary.org/

Rye City School District: http://www.ryeschools.org/

Wainwright House: http://www.wainwright.org/

Meeting House & Bird Homestead: https://www.facebook.com/pages/Meeting-House-and-Bird-Homestead/117270311693348

Sector Specific Sites:

1. Energy Efficiency

- **DOE information on making your home energy efficient: http://energy.gov/public-services/homes**
- **EPA GHG Equivalences Calculator: http://www.epa.gov/cleanenergy/energy-resources/calculator.html**
- **NYSERDA information on energy efficiency and renewable programs: http://www.nyserda.ny.gov/en/Energy-Efficiency-and-Renewable-Programs.aspx**
- **NYSERDA energy saving tips: http://www.nyserda.ny.gov/Residential/Energy-Saving-Tips.aspx**
- **Environmental and Energy Study Institute: http://www.eesi.org/**

The Environmental and Energy Study Institute (EESI) is a not-for-profit organization established in 1984 by a bipartisan Congressional caucus to provide timely climate change information and develop innovative policy solutions that set us on a cleaner, more secure and sustainable energy path.

2. Transportation

- **EPA information on how to improve on air quality: http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html**
- **DOE information on alternative fuels, vehicles, idling reduction: http://energy.gov/public-services/vehicles**
- **NYDEC Page on AQI: http://www.dec.ny.gov/cfmx/extapps/aqi/aqi_forecast.cfm?CFID=1532969&CFTOKEN=44238298&jsessionid=HDfZnBel9-KKRKg06BOQY2Y**
- **WestchesterGov.com AQI page: http://health.westchestergov.com/air-quality**
- **Biofuel Cities: *Running your fleet of vehicles on biofuels: An overview of the latest options.* http://www.biofuel-cities.eu/fileadmin/template/projects/biofuels/files/Publications/bcleaflet_english.pdf**

Although geared towards the European Union, an informative reference about biofuels and city fleets.

3. Waste Reduction and Recycling

- **EPA information on waste reduction, composting: http://www.epa.gov/gateway/learn/wastes.html**

- NYDEC on recycling and composting: http://www.dec.ny.gov/chemical/294.html
- WestchesterGov.com recycling page: http://environment.westchestergov.com/recycling

4. Water/Land Use

- EPA information on Water: http://www2.epa.gov/learn-issues/learn-about-water
- EPA information on Land Use: http://www2.epa.gov/learn-issues/learn-about-land-and-cleanup
- Westchester County's LELE Program: http://www.leleny.org/
- WestchesterGov.com page on Soil/Water Conservation: http://planning.westchestergov.com/environment/soil-and-water-conservation
- WestchesterGov.com page on watershed protection: http://planning.westchestergov.com/watershed-protection
- WestchesterGov.com page on flooding: http://planning.westchestergov.com/flood

5. Community Awareness/Outreach

- EPA information on Green Living: http://www2.epa.gov/learn-issues/learn-about-green-living
- Columbia Center for Children's Environmental Health: http://ccceh.org/our-research
- Mount Sinai Children's Environmental Health Center: http://www.mountsinai.org/patient-care/service-areas/children/areas-of-care/childrens-environmental-health-center/childrens-disease-and-the-environment

Sustainability Plans

By no means comprehensive, the following list includes plans that we referred to in preparing the Rye Sustainability Plan and recommend as good references.

- Town of Bedford Climate Action Plan (2009)
- Village of Larchmont Climate Action Plan (2012)
- GreeNR – The New Rochelle Sustainability Plan (2010)
- Westchester Action Plan for Climate Change and Sustainable Development (2008)
- PlaNCY (2007)
- City of El Paso Livable City Sustainability Plan
- Irondequoit Comprehensive Environmental and Energy Policy (2009)
- City of Claremont Sustainable City Plan (2008)
- Pasadena Green City Action Plan (2006)
- Village of Fairport Sustainability Plan (2010)
- Sustainable Northampton Comprehensive Plan (2008)
- Plan-It Newburgh Sustainable Master Plan (2008)
- Boulder County, CO Environmental Sustainability Plan (2012)
- Town of Collingwood Sustainable Community Plan (2008), Canada
- ICLEI Templates for Sustainability Plans

APPENDICES

GLOSSARY/ACRONYMS

AGENDA 21 A global plan for achieving Sustainable Development in the 21st century.

ANTHROPOGENIC Made by people or resulting from human activities. Usually used in the context of emissions that are produced as a result of human activities.

AQI Air Quality Index, an index for reporting daily air quality.

ATMOSPHERE The gaseous envelope surrounding the Earth.

BIO ENERGY Renewable energy made available from materials derived from biological sources such as wood, straw, manure, sugarcane, etc.

BIOSPHERE The part of the Earth system comprising all ecosystems and living organisms, in the atmosphere, on land (terrestrial biosphere) or in the oceans (marine biosphere), including derived dead organic matter, such as litter, soil organic matter and oceanic detritus.

BTU A unit used to describe heat units or energy values. It is typically used to specify the heating or cooling power of appliances such as furnaces, air-conditioners, stoves, grills, etc.

CAP-AND-TRADE PROGRAM Also known as **Emissions Trading,** the government caps the amount of CO2 emissions that may be emitted, by selling emissions permits, i.e. the right to emit a specific volume of the specific pollutant. Firms are required to hold a number of permits equivalent to their emissions. Since the total number of permits cannot exceed the cap, firms must buy emissions permits from those who require fewer permits. This transfer is called a trade.

CARBON CYCLE All parts (reservoirs) and fluxes of carbon. The cycle is usually thought of as four main reservoirs of carbon interconnected by pathways of exchange. The reservoirs are the atmosphere, terrestrial biosphere (usually includes freshwater systems), oceans, and sediments (includes fossil fuels). The annual movements of carbon, the carbon exchanges between reservoirs, occur because of various chemical, physical, geological, and biological processes. The ocean contains the largest pool of carbon near the surface of the Earth, but most of that pool is not involved with rapid exchange with the atmosphere.

CARBON DIOXIDE (CO_2) A naturally occurring gas, and also a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal human-caused greenhouse gas.

CARBON DIOXIDE EQUIVALENT A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO2Eq)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.

CARBON FOOTPRINT The total amount of greenhouse gases that are emitted into the atmosphere each year by a person, family, building, organization, or company. A person's carbon footprint includes greenhouse gas emissions from fuel that an individual burns directly, such as by heating a home or riding in a car. It also includes greenhouse gases that come from producing the goods or services that the individual uses, including emissions from power plants that make electricity, factories that make products, and landfills where trash gets sent.

CARBON MONOXIDE A colorless, odorless, highly poisonous gas, CO, formed by the incomplete combustion of carbon or a carbonaceous material, such as gasoline.

CC/AC Conservation Commission Advisory Council of the City of Rye

CFL Compact fluorescent light

CLEAN AIR ACT Federal legislation to reduce harmful emissions from industry and power plants.

CLEAN AIR AND CLIMATE PROTECTION SOFTWARE (CACP) Software tool that was developed by ICLEI to help convert energy use into GHG emissions.

CLIMATE Climate in a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period is 3 decades, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

CLIMATE CHANGE Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

CO2e CO2 equivalent

COOL ROOFS A cool roof reflects and emits the sun's heat back to the sky instead of transferring it to the building below. "Coolness" is measured by two properties, solar reflectance and thermal emissions.

CSA Community Supported Agriculture

DEFORESTATION Those practices or processes that result in the conversion of forested lands for non-forest uses. Deforestation contributes to increasing carbon dioxide concentrations for two reasons: 1) the burning or decomposition of the wood releases carbon dioxide; and 2) trees that once removed carbon dioxide from the atmosphere in the process of photosynthesis are no longer present.

EAGR Environmental Advocacy Group of Rye (see box on p. 48)

EAST COAST A developing trail system, spanning nearly 3,000 miles as it winds its way between Canada and Key West, linking all the major cities of the eastern seaboard. Over 25% of the route is already on safe, traffic-free paths.

ENERGY AUDIT An energy audit is an analysis of a single building or campus, which indicates how and where that building or campus can reduce energy consumption and costs.

EARTH SUMMIT IN RIO DE JANEIRO Meeting of 172 governments to development a global action plan for Sustainable Development.

EMISSIONS TRADING See “Cap-and-Trade Program”

EPA Environmental Protection Agency

ESTUARY A partly enclosed coastal body of brackish (salt/fresh) water with one or more rivers or streams flowing into it, and with a free connection to the open sea.

FEMA Federal Emergency Management Agency

FOSSIL FUEL A general term for organic materials formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years.

GDP Gross Domestic Product, the total market value of all the goods and services produced within the borders of a nation during a specified period.

GLOSSARY/ACRONYMS

GEOTHERMAL ENERGY	Thermal energy and heat that is stored in the earth.
GREENHOUSE EFFECT	Trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. Some of the heat flowing back toward space from the Earth's surface is absorbed by water vapor, carbon dioxide, ozone, and several other gases in the atmosphere and then reradiated back toward the Earth's surface. If the atmospheric concentrations of these Greenhouse Gases rise, the average temperature of the lower atmosphere will gradually increase. See **Greenhouse Gas, Anthropogenic, Climate, Global Warming**.
GREENHOUSE GAS (GHG)	Greenhouse gases are heat-trapping gases that occur when we burn fossil fuels, such as coal and oil.
GHG INVENTORY	Account of energy consumed and associated GHG emissions within a defined entity.
HER	Home Energy Rating: a measurement of a home's energy efficiency
HYDROCARBON	Any of numerous organic compounds, such as benzene and methane, that contain only carbon and hydrogen.
HYDROPOWER	Power derived from the energy of falling water.
ICLEI	ICLEI – Local Governments for Sustainability, is an international association, founded in 1990, of local and metropolitan governments dedicated to sustainable development. ICLEI originally stood for the "International Council for Local Environmental Initiatives," but in 2003 the organization dropped the full phrase and became "ICLEI-Local Governments for Sustainability" to reflect a broader focus on sustainability, not just environmental initiatives.
INFRARED RADIATION	Infrared radiation consists of light whose wavelength is longer than the red color in the visible part of the spectrum, but shorter than microwave radiation. Infrared radiation can be perceived as heat. The Earth's surface, the atmosphere, and clouds all emit infrared radiation, which is also known as terrestrial or long-wave radiation. In contrast, solar radiation is mainly short-wave radiation because of the temperature of the Sun. See **Greenhouse Effect, Global Warming.**
IPCC	The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. In the same year, the UN General Assembly endorsed the action by WMO and UNEP in jointly establishing the IPCC.
KEROSENE	A thin, clear liquid formed from hydrocarbons, and burned as a fuel.
KYOTO PROTOCOL	Agreement among nations to mandate country-by-country reductions in greenhouse-gas emissions.
LED	LED stands for light emitting diode. LED lights use at least 75% less energy than incandescent lighting, last 35 to 50 times longer than incandescent lighting and about two to five times longer than fluorescent lighting, and produce very little heat.
LELE	Love 'Em and Leave 'Em, Westchester County's leaf mulching-in-place program. See End Notes/Resources Section for link to the website.

LOW FLOW PLUMBING FIXTURES	Help save water. In 1995, the National Energy Policy Act mandated the use of toilets that use no more than 1.6 gallons of water per flush. Since then, low-flow plumbing fixtures including toilets, faucet aerators and showerheads have been developed that save substantial amounts of water compared to conventional fixtures, while providing the same utility.
METHANE	An odorless, colorless, flammable gas, CH4, the major constituent of natural gas, that is used as a fuel and is an important source of hydrogen and a wide variety of organic compounds; a greenhouse gas.
MMBTU	One million BTU
MSW	Municipal Solid Waste. MSW refers to the stream of garbage collected through community sanitation services. Medical wastes from hospitals and items that can be recycled are generally excluded from MSW used to generate electricity.
NWEAC	Northern Westchester Energy Action Consortium
NYSERDA	The New York State Energy Research and Development Authority, established in 1975.
NITROGEN OXIDE (NOX)	A group of different gases made up of different levels of oxygen and nitrogen. Two of the most common nitrogen oxides are: Nitrogen Dioxide and Nitric Oxide. NOx is given off in many forms, such as smog or particles. Is formed when certain fuels (oil, gas and coal) are burned at a high temperature, such as combustion. Helps form acid rain and contributes to global warming.
OCEAN ENERGY	The ocean can produce two types of energy: thermal energy from the sun's heat, and mechanical energy from the tides and waves. Oceans cover more than 70% of Earth's surface, making them the world's largest solar collectors. The sun's heat warms the surface water a lot more than the deep ocean water, and this temperature difference creates thermal energy.
OZONE	A gas that occurs both in the Earth's upper atmosphere and at ground level. Ozone can be "good" or "bad" for people's health and for the environment, depending on its location in the atmosphere.
PCSD	Council on Sustainable Development under President Clinton, formed in 1993 and terminated six years later.
PHYTOREMEDIATION	The use of green plants to remove pollutants from the environment or render them harmless.
PLANYC	New York City's Sustainability Plan introduced in 2007.
RCDS	Rye Country Day School
RCSD	Rye City School District
RNC	Rye Nature Center
RSC	Rye Sustainability Committee, established in October 2010.
RSP	Rye Sustainability Plan
RYE OR CITY	The City of Rye
SOLAR ENERGY	Radiant heat and light from the sun.
SRREN	Report on Renewable Energy Sources and Climate Change Mitigation issued by IPCC.

APPENDICES

GLOSSARY/ACRONYMS

STORMWATER RUNOFF

Stormwater runoff is the excess rain or melted snow that cannot be absorbed by the soil and flows off our roofs, and over our yards, parking lots, and streets.

SULFUR DIOXIDE EMISSIONS

A toxic gas that is released by volcanoes and in various industrial processes. Since coal and petroleum often contain sulfur compounds, their combustion generates sulfur dioxide unless the sulfur compounds are removed before burning the fuel. Sulfur dioxide emissions are also a precursor to particulates in the atmosphere. Both of these impacts are cause for concern over the environmental impact of these fuels.

SWEAC

Southern Westchester Energy Action Consortium

SUSTAINABLE DEVELOPMENT

As defined by the Brundtland Commission (1987): development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

VOCS

Volatile Organic Compounds are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They often are compounds of fuels, solvents, hydraulic fluids, paint thinners, and dry-cleaning agents commonly used in urban settings. VOC contamination of drinking water supplies is a human-health concern because many are toxic and are known or suspected human carcinogens.

WATERSHED

A region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.

WETLANDS

A land area that is saturated with water, either permanently or seasonally, such that it takes on the characteristics of a distinct ecosystem. Primarily, the factor that distinguishes wetlands from other land forms or water bodies is the characteristic vegetation that is adapted to its unique soil conditions: Wetlands consist primarily of hydric soil which supports aquatic plants.

WIND ENERGY

Kinetic energy from the wind is converted into mechanical energy.

SUSTAINABILTY SPOTLIGHT:

TREES FOR OUR CHANGING ENVIRONMENT

The City of Rye is a truly beautiful municipality to reside in. The city is endowed with many natural assets including a waterfront position on the Long Island Sound, the Edith Read Sanctuary, the Marshlands Conservancy, Rye Town Park, the Rye Nature Center, and other unique resources. However, the one defining feature that sets us apart from many surrounding Westchester municipalities is the number of trees that line our streets and grace our yards. Many residents would agree that it is the amount and variety of trees that imbue the City of Rye with its fundamental beauty and leafy allure.

Despite their natural appeal, our City's trees are constantly threatened by many direct and indirect forces. New development and clear-cutting are a continual threat, as are invasive species, but in the past several years there have been a growing number of extreme weather events that have destroyed and damaged hundreds of trees in Rye. Just in the past year and a half alone, Hurricane Irene, the snowstorm of October 2011 and Hurricane Sandy have wreaked havoc on our trees.

This trend is reflected on a larger scale throughout the U.S. The results of a U.S. Forest Service Study National results that were released in February 2012 indicate that "tree cover in urban areas of the United States is declining at a rate of about 4 million trees per year ...Tree cover in 17 of the 20 cities analyzed in the study declined while 16 cities saw increases in impervious cover, which includes pavement and rooftops." The study included a cost/benefit analysis that showed that "The benefits derived from urban trees provide a return three times greater than tree care costs, (including) as much as $2,500 in environmental services such as reduced heating and cooling costs during a tree's lifetime."

Despite their many long-term economic and environmental benefits, the potential dangers posed by falling trees and branches during these storms have made

trees a public relations challenge. Residents are rightly worried about protecting their families and properties from downed trees and limbs. Given the proliferation in the number of extreme weather events that Rye is experiencing, many residents might choose to proactively remove healthy trees from their yards rather than run the risk that the next storm will cause them to topple.

In summary, several dynamics here in the City of Rye are causing the removal of trees at an accelerated pace: 1) new development and construction are stripping trees, 2) extreme weather events are destroying and damaging trees more frequently, 3) residents may intentionally be removing trees to avoid the risk that they may fall during the next extreme weather event. Given these converging factors, it is an exigent time to review and highlight the importance of trees and the many advantages they confer; how to minimize the dangers posed by trees by planting the right tree in the right place; and how best to protect and care for our trees.

Why Trees Matter

In an April 11th, 2012 Op-Ed piece in The New York Times, Jim Robbins writes that "We have underestimated the importance of trees. They are not merely pleasant sources of shade but a potentially major answer to some of our most pressing environmental problems. We take them for granted, but they are a near miracle." Below is a list of some of the reasons why trees are a natural environmental ally here in Rye.

1. Flood Mitigation

The City of Rye has experienced a number of severe floods in the past decade – two back-to-back episodes in the spring of 2007 and another major flood in the wake of 2011's Hurricane Irene. Trees are important flood mitigators as they absorb storm-water runoff. According to the USDA Forest Service, a single tree in the Northeast can absorb over 1,900 gallons of water per year. Their introduction to the guidelines for reducing storm-water runoff reads as follows "Trees are mini-reservoirs, controlling runoff volumes and erosion of watercourses, as well as delaying the onset of peak flows... Studies that have simulated urban forest effects on storm-water runoff have reported reductions of 2 to 7 percent." Benefits associated with rainfall interception and reducing storm-water runoff are substantial for all tree types."

In addition, trees have been shown to influence the flow of water. Trees reduce topsoil erosion by catching precipitation with their leaf canopies. This lessens the force of storms and slows down water runoff, which in turn ensures that our groundwater supplies are continually being replenished. Along with breaking the fall of rainwater, tree roots remove nutrients that are harmful to water ecology and quality. Leaves that have fallen from the trees and begun to decay form an organic layer that allows water to percolate into the soil which also aids in the reduction of runoff and soil erosion. All of this also helps reduce street flooding and sedimentation in streams.

TREES FOR OUR CHANGING ENVIRONMENT

2. Climate Change Reduction

Trees act as natural greenhouse gas sinks. Suburban forests reduce atmospheric CO2 by directly sequestering CO2 in their stems and leaves while they grow. According to the USDA's Northeast Community Tree Guide, "a study of New York City's urban forest found that trees stored 1.35 million tons of atmospheric CO2...The 5.2 million trees sequestered approximately 42,329 tons of atmospheric CO2 annually." Planting trees remains one of the most cost-effective means of drawing excess CO2 from the atmosphere. If every American family planted one tree, the amount of CO2 in the atmosphere would be reduced by one billion pounds annually. This equates to almost 5 percent of the amount that human activity pumps into the atmosphere each year.

3. Air Quality Enhancement

Trees also remove other gaseous pollutants through the stomata in the leaf surface by absorbing them with normal air components. Some of the other major air pollutants and their primary sources are:

- **Sulfur Dioxide (SO2)** – Sixty percent of sulfur dioxide comes from coal burning for electricity and home heating while 21 percent comes from refining and the combustion of petroleum products.
- **Ozone (O3)** – Ozone is a naturally occurring oxidant that exists in the upper atmosphere. O3 may be brought to Earth by turbulence during severe storms. Also, small amounts are formed by lightning. Automobile emissions and industrial emissions mix in the air and undergo photochemical reactions in sunlight releasing ozone and another oxidant, peroxyacetylnitrate (PAN). Naturally, high concentrations of these two oxidants build up where there are many automobiles.
- **Nitrogen Oxides (NOx)** – Probably the largest producer of nitrogen oxide is automotive exhaust. These are also formed by high temperature combustion when two natural air components are present; nitrogen and oxygen.

- **Particulates** – These are small particles emitted in smoke from burning fuel, particularly diesel, which enters our lungs and causes respiratory problems. With trees present, there is up to a 60 percent reduction in street-level particulates.

Studies have shown that in one urban park, tree cover removed 48 pounds of particulates, 9 pounds of nitrogen dioxide, 6 pounds of sulfur dioxide, 0.5 pounds of carbon monoxide and 100 pounds of carbon – daily. It has also been noted that one sugar maple along a roadway removes 60mg cadmium, 140mg chromium, 820mg nickel and 5,200mg lead from the environment in one growing season.

4. Energy Conservation

Trees help to modify local climate by lowering air temperature, increasing humidity, influencing wind

speeds and reducing glare. In the warmer months of the year, urban areas realize lower air temperatures when trees are strategically planted along streets and near buildings. These trees provide shade and evaporation of water through the transpiration process. The evaporation from a single large tree can produce the cooling effect of 10 room-sized air conditioners operating 24 hours a day. Communities in which homeowners utilize trees in their landscaping also benefit. When homeowners properly place trees in landscaping they benefit from savings on daytime air conditioning. For example, three or more large trees strategically placed on the sunny sides of a house will provide enough shade to reduce air-conditioning costs by as much as 30 percent. Trees (mostly evergreen trees, as deciduous trees lose their leaves in the winter) also help with energy costs in the winter by blocking cold winds thereby reducing the strain on heating units.

These energy savings, when spread over many houses, neighborhoods and urban areas, can reduce the demand for power production by utility plants, which also reduce the amount of air pollutants produced by these power plants.

5. Wildlife Habitat

It is only natural that wherever trees are planted, wildlife and other plants are sure to follow. Trees provide shelter and food for a variety of birds and small animals, such as squirrels and beavers. Enhancing growth diversity, trees create an environment that allows the growth of plants that otherwise would not be there.

Flowers, fruits, leaves, buds and woody parts of trees are used by many different species. Bacteria and fungi contained in tree parts cause decay which makes nesting easier for some birds and increases soil fertility and structure for furrowing by other land animals.

Trees also provide shade, reduce water and air temperatures and contribute to the overall health of aquatic ecosystems by providing habitat, shelter and food for aquatic species such as turtles, otters, beavers and fish.

6. Aesthetic and Real-Estate Value

Trees add beauty to their surroundings by adding color to an area, softening harsh lines of buildings, screening unsightly views and contributing to the character of their environment. Trees have also proven to contribute to a community's economy and way of life. Depending on species, maturity, quantity and location, property values increase 5 to 15 percent when compared to properties without trees.

Trees enhance their surroundings in many ways. Trees planted along and around buildings provide a distraction for the eye, softening the background and screening unsightly views. Trees also contribute eye-catching colors to their surroundings, from the different shades of green found in the leaves, the colors found in flowering trees and sometimes even the bark of the tree.

Trees also lend to the preservation of streets paved with asphalt. Asphalt paving contains stone aggregate in

TREES FOR OUR CHANGING ENVIRONMENT

an oil binder. Without shade provided by trees, the oil heats up and volatizes, leaving the aggregate unprotected. Vehicles then drive over the aggregate causing it to loosen which grinds down the pavement. Therefore, not only do trees help to maintain the integrity of community roads, they also lower costs expended on re-paving roadways.

The condition of a community's trees and collectively, its urban forests, is usually the first impression a community projects to its visitors. A community's urban forest is an extension of its pride and community spirit. Studies show that trees also enhance community economic stability by attracting businesses and tourists as people tend to linger and shop longer along tree-lined streets. Studies have also shown that apartments and offices in wooded areas rent more quickly and businesses leasing office spaces in developments with trees reported higher productivity and fewer absences.

Invasive Trees

Planting invasive tree species is detrimental to our environment and economy. Invasive species have specific traits or specific combinations of traits that allow them to out-compete native species. Invasive species grow and reproduce quickly, and spread aggressively, with potential to cause harm. The DEC website defines invasive species as "a species that is: (a) non-native to the ecosystem under consideration; and (b) whose introduction causes or is likely to cause economic or environmental harm or harm to human health.". Currently, the City of Rye tree code (Chapter 187) prohibits "property owners and other persons from planting silver maples and allied species, ailanthus and poplars of any variety within a distance of 20 feet from any public street, right-of-way, sidewalk or other public place."

A list of invasive species in the New England area can be found in the Invasive Plant Atlas of New England (IPANE). The following are the species identified to be invasive in this geographic region.

Scientific Name	Common Name
Acer ginnala Maxim.	Amur maple
Acer platanoides L.	Norway maple
Acer pseudoplatanus L.	Sycamore maple
Ailanthus altissima (Mill.)	Tree of heaven
Alnus glutinosa (L.)	European black alde
Paulownia tomentosa	Princess tree
Populus alba L.	White poplar
Robinia pseudoacacia L.	Black locust

The Right Tree in the Right Place

In order to avoid some of the dangers and inconveniences posed by mature trees that the City of Rye has witnessed during recent weather events, it is essential to consider exactly what tree type is best for the space before it is to be planted. A proper landscape plan takes each tree into consideration. Below is a list of important factors to consider before planting a tree.

1. **Height.** Will the tree bump into anything when it is fully grown or will it pose a potential hazard to a building or residence once it is mature?

2. **Canopy spread.** How wide will the tree grow? Again, will its mature canopy eventual cause undesirable proximity to a building or residence.

3. **Is the tree deciduous or coniferous?** (Will it lose its leaves in the winter?)

4. **Form or shape.** A columnar tree will grow in less space. Round and V-Shaped species provide the most shade.

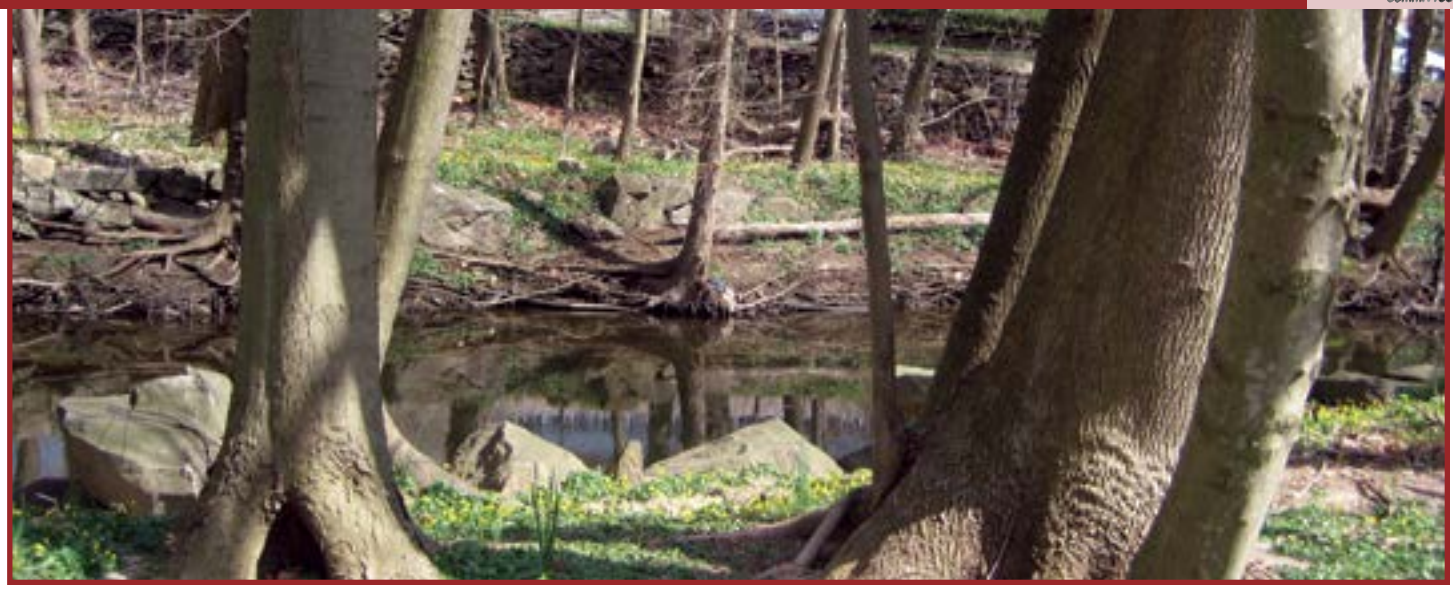
5. **Growth rate.** How long will it take for your tree to reach its full height? Slow growing species typically live longer than fast growing species.

6. **Invasives.** Is the tree species native to this region? Invasive trees tend to grow quickly with a shallow root system causing them to be more prone to blow-downs. In addition, native species are the optimum choice for wildlife habitat restoration or enhancement.

7. **Soil, sun, and moisture** requirments.

8. **Fruit.** No one wants messy droppings on busy sidewalks.

9. **Hardiness zone** indicates the temperature extremes in which a tree can be expected to grow.



Pruning Standards

Caring for and pruning our trees properly is vital to maintaining tree health and promoting their safe growth which helps minimize the dangers they can pose. For more information on proper tree care, residents can refer to the pruning standards set forth by ANSI (American National Standards Institute) and ISA (International Society of Arboriculture).

1. Why Prune a Tree?

Health

- Remove dead, damaged and diseased branches to help prevent insect & decay organisms from entering the tree.
- Thin a dense canopy on a tree to increase air and sunlight, resulting in fewer disease problems.
- Remove suckers & water sprouts to eliminate weak wood and provide more food and water for the tree.
- Eliminate crossing branches to prevent damage caused by their rubbing against each other.
- Weak or narrow crotches split apart as the tree grows older. Remove these crotches to eliminate breaking and tearing of wood.
- Remove co-dominant leaders. Co-dominant leaders are two branches growing near the top of a tree that grow straight up and become equally dominant. Cutting off one allows the other branch to grow & become the dominant branch. This prevents the branches from splitting and tearing wood that is often a problem in heavy winds.

Safety

Correct pruning procedures create and maintain a strong tree structure, preventing safety hazards such as low growing branches and growth forms subject to storm damage near a house, driveway or sidewalk.

Maintain natural tree form

Often erratic or vigorous branches grow that change the growth habit of other branches and results in a misshaped tree. Early removal of these vigorous branches maintains a natural tree form.

Stimulate or restrict growth

Pruning can stimulate growth in sparse areas of the tree. Pruning can also restrict growth where too much growth is undesirable.

2. When Do You Prune a Tree?

Dead, damaged, and diseased branches should be removed as soon as possible. Otherwise, the best time to prune is in late winter, early spring, just before the tree begins to open its buds. While pruning can be done anytime, it is always good to avoid hot dry periods and extreme winter cold. If you do prune trees after the leaves have opened, be sure to allow them to fully develop their leaves plus some additional time to recoup the energy they used.

WASTE DISPOSAL OPTIONS FOR REDUCTION OF OVERALL CARBON FOOTPRINT

Waste disposal is an extremely important environmental issue for cities everywhere. Not only must we generate less waste but we can also reuse/ recycle the waste we do create in an energy efficient manner. The City of Rye Sustainability Committee is looking for ways to reduce costs of waste removal and decrease our waste footprint. With this in mind, there are two waste recycling initiatives, which can help mitigate the proliferation of our waste.

1. Greasecycling

Greasecycling is the conversion of used cooking oil into a clean burning fuel called biodiesel. Oil is collected from restaurants, clubs and other establishments. It is then refined and used as feedstock for biodiesel.

"Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics." This renewable energy meets strict industry standards and is extremely energy efficient. " A U.S. Department of Energy study showed that the production and use of biodiesel, compared to petroleum diesel, resulted in a 78.5% reduction in carbon dioxide emissions. Moreover, biodiesel has a positive energy balance. For every unit of energy needed to produce a gallon of biodiesel, at least 4.5 units of energy are gained.[19]

The Rye Department of Public Works' (DPW) fleet is partially run on diesel fuel and capable of utilizing biodiesel without further modifications. Since 2005, Rye's DPW diesel consumption has increased 26.8%, while the use of gasoline has decreased 14.8%. One company, Hudson Bio Fuel, has estimated that 3,760 gallons of waste oil is produced by Rye City restaurants and clubs.

Pasadena, Ca; Portland, Ore; Denver, Co; Lake Forest, Ill; are among a multitude of cities across the United States that are using biodiesel in their DPW fleets.

For those living on Long Island Sound, there are heightened environmental concerns regarding waste management. Hudson Biofuels points to "the proper disposal of used cooking oil. Oil is lighter than water and tends to spread into thin and broad membranes that hinder the oxygenation of water. Because of this, a single gallon of oil can contaminate as much as one million gallons of water."[20]

2. Organic Waste Disposal

"States have begun to ban food waste from going to landfills or other mixed municipal waste disposal facilities. The bans will prohibit hospitals, correctional facilities, schools, hotels, restaurants, and all other businesses that generate more than one ton of food waste per week from sending food waste for disposal at landfills. Long distance hauling to composting facilities will prove to be a nuisance to store and costly to haul." [21]

Although it is not yet mandatory in Westchester - a densely populated, highly developed county - it is only a matter of time before this will become an issue. So how to reduce food waste?

One company, BioHi Tech, has developed a HiVolume Organic Waste Decomposition system: The Eco-Safe Digester. The Eco-Safe Digester will safely and quickly decompose virtually all organic food waste including: meat, poultry, fish, fruit, vegetables, rice, pasta, bread, coffee grinds, eggshells, and dairy products. A highly refined formula of microorganisms is used to breakdown organic waste into a liquid, which can be safely disposed down the drain, completely eliminating the waste, and ultimately allowing the effluent to return to our ecosystem. In a restaurant, the dishwasher simply wipes leftovers off the plate into

19 National Biodiesel Board
20 Hudson Biofuel
21 Bio HiTech

the Digester rather that into a garbage bag. There are a multitude of economical and environmental benefits:

- Reduces Waste Transportation Costs by Reducing Number of Pick Ups
- Lowers Emissions from Less Truck Traffic and Land-filling
- Diverts Organic Waste from Landfills
- Extends the Lifespan of the County's Disposal Facilities
- Recycles Food Waste into a Reusable Resource (water, energy and fertilizer)
- Reduces Janitorial Supply Costs
- Measures Environmental Performance
- Shrinks Environmental Footprint
- Improves Efficiency and Workflow
- Eliminates Compactor Odors
- Creates a Safer Environment for Employee

Area clubs and schools that are intent on being ahead of the curve, are implementing or considering this system.